Support Document for the Revised National Priorities List Final Rule - 2002

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ABSTRACT

Pursuant to Section 105(a)(8)(B) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), the U.S. Environmental Protection Agency (EPA) periodically adds hazardous waste sites to the National Priorities List (NPL). Prior to actually listing a site, EPA proposes the site in the *Federal Register* and solicits public comments.

This document provides responses to public comments received on one site proposed on July 27, 2000 (65 FR 46131), two sites proposed on December 1, 2000 (65 FR 75215), one site proposed on January 11, 2001 (66 FR 2380), and two sites proposed on June 14, 2001 (66 FR 32287). All of the sites are added to the NPL based on an evaluation under the HRS. These sites are being added to the NPL in a final rule published in the *Federal Register* in January 2002.

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EXECUTIVE SUMMARY

Section 105(a)(8)(B) of CERCLA, as amended by SARA, requires that the EPA prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. An original NPL was promulgated on September 8, 1983 (48 FR 40658). CERCLA also requires the EPA to update the list at least annually.

This document provides responses to public comments received on one site proposed on one site proposed on July 27, 2000 (65 FR 46131), two sites proposed on December 1, 2000 (65 FR 75215), one site proposed on January 11, 2001 (66 FR 2380), and two sites proposed on June 14, 2001 (66 FR 32287. All of the sites are added to the NPL based on an evaluation under the HRS. These sites are being added to the NPL in a final rule published in the *Federal Register* in January 2002.

The six sites addressed in this document are listed in the following table.

SITES ADDRESSED IN THIS DOCUMENT

					HRS Score	
Region	**State**	**Site Name**	**City**	**Proposal Date**	**Proposed**	**Final**
2	NJ	Diamond Head Oil Refinery Div.	Kearney	July 27, 2000	30.00	30.00
2	NJ	Quanta Resources	Edgewater	January 11, 2001	50.00	50.00
5	WI	Ashland/Northern States Power Lakefront	Ashland	December 1, 2000	50.00	50.00
6	TX	Patrick Bayou	Deer Park	June 14,2001	50.00	47.83
8	UT	Eureka Mills	Eureka	June 14, 2001	50.00	50.00
9	CA	Del Amo	Los Angelos	December 1, 2000	47.12	47.12

INTRODUCTION

This document explains the rationale for adding eight sites to the NPL of uncontrolled hazardous waste sites and also provides the responses to public comments received on the sites. The EPA proposed one site on July 27, 2000 (65 FR 46131), two sites on December 1, 2000 (65 FR 75215), one site on January 11, 2001 (66 FR 2380), and two sites on June 14, 2001 (66 FR 32287). All of the sites are added to the NPL based on an evaluation under the HRS. These sites are being added to the NPL in a final rule published in the *Federal Register* in January 2002.

Background of the NPL

In 1980, Congress enacted CERCLA, 42 U.S.C. Sections 9601 *et seq*. in response to the dangers of uncontrolled hazardous waste sites. CERCLA was amended on October 17, 1986, by SARA, Public Law No. 99-499, stat., 1613 *et seq.* To implement CERCLA, EPA promulgated the revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, on July 16, 1982 (47 FR 31180), pursuant to CERCLA Section 105 and Executive Order 12316 (46 FR 42237, August 20, 1981). The NCP, further revised by EPA on September 16, 1985 (50 FR 37624) and November 20, 1985 (50 FR 47912), sets forth guidelines and procedures needed to respond under CERCLA to releases and threatened releases of hazardous substances, pollutants, or contaminants. On March 8, 1990 (55 FR 8666), EPA further revised the NCP in response to SARA.

Section 105(a)(8)(A) of CERCLA, as amended by SARA, requires that the NCP include

> criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable, take into account the potential urgency of such action, for the purpose of taking removal action.

Removal action involves cleanup or other actions that are taken in response to emergency conditions or on a short-term or temporary basis (CERCLA Section 101(23)). Remedial action tends to be long-term in nature and involves response actions that are consistent with a permanent remedy for a release (CERCLA Section 101(24)). Criteria for placing sites on the NPL, which makes them eligible for remedial actions financed by the Trust Fund established under CERCLA, were included in the HRS, which EPA promulgated as Appendix A of the NCP (47 FR 31219, July 16, 1982). On December 14, 1990 (56 FR 51532), EPA promulgated revisions to the HRS in response to SARA, and established the effective date for the HRS revisions as March 15, 1991.

Section 105(a)(8)(B) of CERCLA, as amended, requires that the statutory criteria provided by the HRS be used to prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. The list, which is Appendix B of the NCP, is the NPL.

An original NPL of 406 sites was promulgated on September 8, 1983 (48 FR 40658). At that time, an HRS score of 28.5 was established as the cutoff for listing because it yielded an initial NPL of at least 400 sites,

as suggested by CERCLA. The NPL has been expanded several times since then, most recently on December 11, 2000 (65 FR 75179). The Agency also has published a number of proposed rulemakings to add sites to the NPL. The most recent proposal was on January 11, 2001 (66 FR 2380).

Development of the NPL

The primary purpose of the NPL is stated in the legislative history of CERCLA (Report of the Committee on Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 [1980]):

> The priority list serves primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial actions. Inclusion of a facility or site on the list does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. Subsequent government actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards.

The purpose of the NPL, therefore, is primarily to serve as an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. The NPL also serves to notify the public of sites EPA believes warrant further investigation. Finally, listing a site may, to the extent potentially responsible parties are identifiable at the time of listing, serve as notice to such parties that the Agency may initiate CERCLA-financed remedial action.

CERCLA Section 105(a)(8)(B) directs EPA to list priority sites among the known releases or threatened release of hazardous substances, pollutants, or contaminants, and Section 105(a)(8)(A) directs EPA to consider certain enumerated and other appropriate factors in doing so. Thus, as a matter of policy, EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist, placing sites on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA has chosen not to place certain types of sites on the NPL even though CERCLA does not exclude such action. If, however, the Agency later determines that sites not listed as a matter of policy are not being properly responded to, the Agency may consider placing them on the NPL.

Hazard Ranking System

The HRS is the principle mechanism EPA uses to place uncontrolled waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations -- the preliminary assessment and site inspection -- to assess the relative potential of sites to pose a threat to human health or the environment. HRS scores, however, do not determine the sequence in which EPA funds remedial response actions, because the information collected to develop HRS scores is not sufficient in itself to determine either the extent of contamination or the appropriate response for a particular site. Moreover, the sites with the highest scores do not necessarily come to the Agency's attention first, so that addressing sites strictly on the basis of ranking would in some cases require stopping work at sites where it was already underway. Thus, EPA relies on further, more detailed studies in the remedial investigation/feasibility study that typically follows listing.

The HRS uses a structured value analysis approach to scoring sites. This approach assigns numerical values to factors, that relate to or indicate risk, based on conditions at the site. The factors are grouped into three categories. Each category has a maximum value. The categories include:

- likelihood that a site has released or has the potential to release hazardous substances into the environment;
- characteristics of the waste (toxicity and waste quantity); and
- people or sensitive environments (targets) affected by the release.

Under the HRS, four pathways can be scored for one or more threats:

- Ground Water Migration (S_{gw})
  - drinking water
- Surface Water Migration (S_{sw})
  These threats are evaluated for two separate migration components (overland/flood and ground water to surface water).
  - drinking water
  - human food chain
  - sensitive environments
- Soil Exposure (S_s)
  - resident population
  - nearby population
  - sensitive environments
- Air Migration (S_a)
  - population
  - sensitive environments

After scores are calculated for one or more pathways according to prescribed guidelines, they are combined using the following root-mean-square equation to determine the overall site score (S), which ranges from 0 to 100:

$$S = \sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2}{4}}$$

If all pathway scores are low, the HRS score is low. However, the HRS score can be relatively high even if only one pathway score is high. This is an important requirement for HRS scoring because some extremely dangerous sites pose threats through only one pathway. For example, buried leaking drums of hazardous substances can contaminate drinking water wells, but -- if the drums are buried deep enough and the substances not very volatile -- not surface water or air.

Other Mechanisms for Listing

Aside from the HRS, there are two other mechanisms by which sites can be placed on the NPL. The first of these mechanisms, authorized by the NCP at 40 CFR 300.425(c)(2), allows each State and Territory to designate one site as its highest priority regardless of score.

The last mechanism, authorized by the NCP at 40 CFR 300.425(c)(3), allows listing a site if it meets all three of these requirements:

- Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends dissociation of individuals from the release;
- EPA determines the site poses a significant threat to public health; and
- EPA anticipates it will be more cost-effective to use its remedial authority than to use its emergency removal authority to respond to the site.

Organization of this Document

Each section that follows addresses site-specific public comments. The sites are arranged by EPA Region and are listed alphabetically by state and site name. Each site discussion begins with a list of commenters, followed by a site description, a summary of comments, and Agency responses. A concluding statement indicates the effect of the comments on the HRS score for the site.

Glossary

The following acronyms and abbreviations are used throughout the text:

Agency	U.S. Environmental Protection Agency
ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Sections 9601 *et seq.*, also known as Superfund
EPA	U.S. Environmental Protection Agency
HRS	Hazard Ranking System, Appendix A of the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300
HRS Score	Overall site score calculated using the Hazard Ranking System; ranges from 0 to 100
NCP	National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300
NPL	National Priorities List, Appendix B of the NCP
NPL-###	Public comment index numbers as recorded in the Superfund Docket in EPA Headquarters and in Regional offices
PA/SI	Preliminary Assessment/Site Inspection
PRP	Potentially Responsible Party
RCRA	Resource Conservation and Recovery Act of 1976 (U.S.C. 9601-6991, as amended)
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision, explaining the CERCLA-funded cleanup alternative(s) to be used at an NPL site
SARA	Superfund Amendments and Reauthorization Act of 1986, Public Law No. 99-499, stat., 1613 *et seq.*

REGION 2

1.1 DIAMOND HEAD OIL REFINERY DIV., KEARNY, NJ

1.1.1 List of Commenters/Correspondents

NPL-U33-3-3-1-R2	Comment dated September 6, 2000 from Steven T. Singer, Counselor-At-Law of Bloomfield, New Jersey, on behalf of Hudson Meadows Urban Land Development Corporation (HMULDC)
NPL-U33-3-3-2-R2	Comment dated September 20, 2000 from D.G. Peter Sarsfield, Attorney At Law of Princeton, New Jersey
NPL-U33-3-3-3-R2	Comment dated November 20, 2000 from Barbara A. Dolce, Senior Project Manager of TRC Vectre on behalf of HMULDC
NPL-U33-5-3-R2	Correspondence dated March 17, 1997 from New Jersey Governor Christine Todd Whitman
NPL-U33-5-9-R2	Correspondence dated September 21, 2000 from David Evans, U.S. EPA Director of the State, Tribal, & Site Identification Center to Steven T. Singer, Counselor-At-Law

1.1.2 Site Description

The Diamond Head Oil Refinery Div. (Diamond Head) site is located at 1401 Harrison Ave. in Kearny, Hudson County, New Jersey. A portion of the facility operated as an oil refinery and another portion is a vegetated landfill located along the western portion of the former facility.

Currently, no industrial activities are active at the location of the former refinery. The site, for Hazard Ranking System (HRS) purposes, includes wetland areas and drainage ditches, a small wetland/pond, a vegetated landfill area along the western border of the site, and the remnants of the former Diamond Head Oil refinery. In January 1985, Newton Refining Corporation sold the refinery to the Mimi Land Development Corporation, which changed its name to Hudson Meadows Urban Land Development Corporation (HMULDC). The refinery portion of the site is owned by HMULDC. For HRS scoring purposes, the site includes two sources located within the former property of the Diamond Head Oil Refinery complex, a contaminated soil area and a backfilled/buried surface impoundment formerly known as the waste oil lake into which waste oils were released (see Figure 3 of HRS documentation record as proposed). On one portion of the former waste oil lake is now a small pond that retains water in part due to modifications to the drainage pattern performed after the backfilling of the waste oil lake. Based on aerial photographs and written descriptions, the original extent of the waste oil lake extended to what is now below Interstate 280 (I-280) and an off ramp from it. These roads are south and east of the remnants of the Diamond Head facility. The areal extent of contamination remaining in the waste oil lake area is unknown, but sampling events show contamination at 0 to 6 inches in depth in the waste oil lake area.

In addition, for HRS scoring purposes, the site includes areas of contaminated wetlands at the southern section of the site where the wetlands merge into Frank's Creek. Originally, much of the entire area may have been wetlands. Also, the remaining portion of the original Diamond Head property includes a landfill, various tanks, and waste materials, but these are not included in the HRS evaluation.

During facility operations, two above-ground storage tanks and possibly underground pits were used to store oily wastes containing hazardous substances such as polychlorinated biphenyls (PCBs). These wastes were intermittently discharged directly to adjacent lands, including the wetland area to the south of the facility, creating the waste oil lake. The New Jersey Department of Transportation (NJDOT) acquired the property upon which a part of the waste oil lake was located on March 6, 1968. In 1977, NJDOT began construction of I-280 and was reported to have removed 9 million gallons of contaminated water and contaminated sludge from the lake. In the HRS documentation record as proposed, EPA evaluated the waste oil lake (a buried/backfilled surface impoundment) as Source 1. Source 2 consists of contaminated soil throughout the operations area of the Diamond Head facility. The environmental threat component of the surface water migration pathway is scored in the HRS documentation record based on actual and potential migration of hazardous substances to existing wetlands.

1.1.3 Summary of Comments/Correspondence

In a letter dated March 17, 1997, Ms. Christine Todd Whitman, then Governor of New Jersey, supported the placement of the Diamond Head site on the National Priorities List (NPL).

On September 6, 2000, Steven T. Singer submitted comments on behalf of HMULDC requesting an extension of the comment period to November 22, 2000.

On September 20, 2000, D.G. Peter Sarsfield submitted comments and concerns, opposing the Agency's proposal to list the Diamond Head site on the NPL. Mr. Sarsfield made several comments objecting to the Agency's calculation of the site hazardous waste quantity. Mr. Sarsfield contended that the Agency should take removal actions into account when evaluating hazardous waste quantity. Mr. Sarsfield also contended that the Agency should base waste characteristics only on areas where current Agency and State cleanup criteria are exceeded. Mr. Sarsfield questioned the accuracy of analytical data based on alleged discrepancies in the data. Mr. Sarsfield also asked several questions about potentially responsible parties and liability. Mr. Sarsfield contended that, based on his comments, the Diamond Head site score will drop below the 28.50 cutoff.

On November 20, 2000, Barbara A. Dolce of TRC Vectre submitted comments on behalf of HMULDC opposing the Agency's proposal to place the Diamond Head site on the NPL. Ms. Dolce, hereafter referred to as HMULDC, disagreed with the site boundaries and contended that HMULDC is not liable because refining operations ceased before HMULDC's ownership of the property. HMULDC stated that the Agency's calculation of hazardous waste quantity is incorrect and should consider completed removal actions. HMULDC disputed the Agency's wetland delineation methodology and wetland extent, based on the interpretation of a site reconnaissance visit and wetlands inspection report prepared for HMULDC by Wetlands and Environmental Technology, Inc. (WET) (submitted as Attachment A to HMULDC's comment letter). HMULDC questioned the location and condition of drainage ditches, surface water flow patterns, and sample locations. HMULDC commented that the HRS does not consider the value of the

wetlands, nor is the magnitude of contaminant concentrations taken into account. HMULDC contended that its comments result in a site score for the Diamond Head site below the 28.50 cutoff for NPL eligibility.

1.1.3.1 Request for Extension of Comment Period

Steven T. Singer, Counselor-At-Law, writing on behalf of HMULDC, requested that the date for submission of comments be extended from September 25, 2000, to November 22, 2000. The request included several possible rationales for the extension, including claims that it took 30 days to receive a copy of the Docket; that various governmental files needed to be reviewed for relevant information; and that additional sampling and analysis may be necessary.

In response, the U.S. Environmental Protection Agency (the Agency or EPA) granted this request on September 21, 2000, and the extended comment period closed on November 22, 2000.

1.1.3.2 Site Boundaries

HMULDC commented that EPA's narrative summary incorrectly implied that HMULDC owns the three lots (Lots 3, 14, and 15) upon which Diamond Head operated. HMULDC stated that only Lot 3 of Block 285 is owned by HMULDC; Lots 14 and 15 are owned by the Town of Kearny. HMULDC also stated that EPA considers the three lots to comprise the site. Mr. Sarsfield also questioned the extent of the site, mentioning adjacent property where waste was located and the MSLA landfill, where waste was deposited. Mr. Sarsfield also stated that the 15-acre site proposed by EPA may not be of sufficient size to represent the entire area with environmental concerns.

In response, the Diamond Head "site" does not conform to any particular property boundaries. As explained in the Federal Register when the site was proposed (65 FR 46313, July 27, 2000), the extent of a Superfund site is not restricted by property boundaries, but by where contamination has come to be located. CERCLA Section 105(a)(8)(A) requires EPA to list national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release and not precisely delineated boundaries. Further, CERCLA Section 101(a) defines a "facility" as the "site" where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." The "come to be located" language gives EPA broad authority to clean up contamination when it has spread from the original source.

The HRS, 40 CFR Part 300, Appendix A, Section 1.1, *Definitions*, elaborates on the "come to be located" language, defining "site" as "area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources, and may include the area between the sources." The HRS score for the Diamond Head site is based on two sources, a contaminated soil area and the buried/backfilled surface impoundment, and the observed releases to wetlands south and west of the landfill (see Figure 3 of HRS documentation record).

Until the investigation process has been completed and a remedial action (if any) selected, EPA generally does not attempt to estimate the full extent of contamination at the site or describe the ultimate

dimensions of the NPL site. Even during or following a remedial action (e.g., the removal of buried drums), EPA may find that the contamination has spread farther than or not as far as previously estimated.

EPA has modified the site narrative in the HRS documentation record and the NPL Site Narrative to say that "The refinery portion of the site is currently owned by HMULDC." With regard to Lots 3, 14, and 15, areas of the site do extend to these lots, but as stated previously, a site is not defined by property boundaries, and ownership of the lots is not considered in defining the site.

1.1.3.3 Liability/Potentially Responsible Party (PRP) Identification

Mr. Sarsfield asked several questions about who is liable for future cleanup of the site. Mr. Sarsfield asked how much of the costs associated with NJDOT's 1977 removal were recovered by NJDOT following its successful suit against responsible parties. Mr. Sarsfield asked about the solvency of other potentially responsible parties. Mr. Sarsfield also asked whether EPA had determined the liability for future site remediation, if any, and if EPA had developed a list of potentially responsible parties. HMULDC also noted that no activity had taken place at the site since Lot 3 has been owned by HMULDC, or its predecessor company, Mimi Land Development Corporation (MLDC).

In response, Mr. Sarsfield's and HMULDC's concerns about liability for contamination at the Diamond Head site are not factors considered when placing the site on the NPL. The NPL serves as an informational tool for use by EPA in identifying those sites that appear to present a significant risk to public health or the environment. It does not reflect a judgment on the activities of the owner(s) or operator(s) of a site; it does not require those persons to undertake any action, nor does it assign any liability to any person. This position, stated in the regulatory history of CERCLA (48 FR 40759, September 8, 1983), has been explained more fully in the Federal Register (65 FR 46313, July 27, 2000). See also Kent County V. EPA, 963 F.2d 391 (D.C. Cir. 1992). The process of identifying responsible parties and determining their solvency occurs at a different stage of the Superfund process and is generally not undertaken until after the site is placed on the NPL. Also, cost recovery associated with previous removals is not relevant to the present listing. Like the PRP search, it is a liability issue and will be considered at the appropriate time within the appropriate regulation. Therefore these comments are not relevant to the listing decision.

1.1.3.4 Current Conditions

Mr. Sarsfield commented that the hazardous waste quantity determination in the HRS documentation record did not account for previous removals of hazardous waste from the site. Mr. Sarsfield described two waste removal actions and asserted that these removal actions reduced the hazardous waste quantity at the site. The first removal action was conducted by the New Jersey Department of Transportation (NJDOT) in 1977 during construction of I-280. This action removed waste oil contaminated water and oily sludge from the waste oil lake. The second removal action conducted by Refinement International Co. in 1982 removed contaminated soil and liquids from the site. Mr. Sarsfield stated that "[o]nly those hazardous substances and/or waste that exist on the site in 2000 are relevant to the calculation of the HRS scoring components for the site in the context of proposing the site for addition to the NPL list."

In response, EPA's policy is to consider certain removal actions to increase incentives for rapid response actions at sites. The preamble to the HRS discusses consideration of such removal actions in the assignment of HRS scores (Section Q of the preamble of the HRS, 55 FR 51568, December 14, 1990). According to Section Q of the preamble to the HRS, EPA will calculate waste quantities based on "current conditions," which may differ from initial conditions, as the result of a response action; however, the preamble notes that this approach must ensure that "the HRS score reflects any continuing risk at sites where contamination occurred prior to any response action" and that "the accuracy of this approach depends on being able to determine with reasonable confidence the quantity of hazardous constituents remaining in sources at the site and the quantity released to the environment." The preamble further states that "removal actions may not reduce waste quantity factor values unless the quantity of hazardous constituents remaining in sources and in releases can be estimated with reasonable confidence" and that "parties undertaking removal actions will have primary responsibility for collecting any data needed to support a determination of the quantity of hazardous constituents remaining." Thus, the parties arguing for a change in HRS score have the burden of providing the information to support such a score change.

At the Diamond Head site, hazardous substances in both sources used in the HRS evaluation still remain at the site. Source 1 is a buried and backfilled surface impoundment, and Source 2 is a contaminated soil area. Hazardous substances remain in the source areas and have migrated or are available to migrate from these source areas, impacting ground water, surface water, and wetlands, as they were prior to the removals; therefore, significant continuing risks are posed to sensitive environments by the remaining hazardous substances. Mercury and PCBs, both with an ecotoxicity factor value of 10,000, the maximum assigned value, are present in sources and observed release samples at the site (see pages 30 and 33 of the HRS documentation record as proposed). Evidence presented below documents that neither removal was complete and that risks associated with Sources 1 and 2 continue to threaten human health and the environment.

- Conditions at the site as of EPA's December 1999 Site Inspection (SI) reveal that extensive contamination is still present in the former waste oil lake area and an area of contaminated soil after the removals. Samples from borings collected during the SI in the former waste oil lake area and throughout the property showed hazardous substances contained in residual waste oil, sediments, and soil throughout the site (see pages 11-14 of Reference 11 of the HRS documentation record as proposed, *ESI Field Logbook - Diamond Head Oil Refinery Div.*, and pages 12, 14, 20, and 21 of the HRS documentation record).

- Other evidence of the incomplete waste removal includes a statement by the Deputy Attorney General of the State of New Jersey that ". . . in the course of the Route 280 construction [after the 1977 NJDOT waste oil lake removal action], an 'underground Lake' of [waste] oil contaminated groundwater has been found extending from the eastern limits of the right-of-way to Frank's Creek on the west" (see page 2 of Reference 5 of the HRS documentation record as proposed, *Memorandum of Meeting*).

- The NJDOT noted at least two incidents in 1977 and 1978 when the Diamond Head Oil Refinery was releasing waste oil into the former waste oil lake area along the western/southwestern portions of the property (see pages 2, 3, and 4, of Reference 12 of the HRS documentation record as proposed, *Project Note to Diamond Head Oil Refinery Div. File, Subject: Observations of Oil Discharge and Oil Stained Soil at Diamond Head Oil*). These releases occurred after the 1977 NJDOT removal action and would not have been addressed in subsequent removal actions.

- In December 1985, the New Jersey Department of Environmental Protection (NJDEP) conducted an inspection of the Diamond Head site and identified a 30 foot by 60 foot area of oil stained soil emanating from the first tank, indicating possible contaminated soil conditions after the 1982 contaminated soil removal action conducted by Refinement International Co. The second tank was partially filled with ". . . a heavy black tarry material." In this same general area, six to ten drums (or partial drums) were discovered surrounded by ". . . a heavily stained area." Further inspection of the former waste oil lake area revealed black tarry material along the eastern property boundary next to the I-280 right-of-way (see page 4 of Reference 12 of the HRS documentation record as proposed, *Project Note to Diamond Head Oil Refinery Div. File, Subject: Observations of Oil Discharge and Oil Stained Soil at Diamond Head Oil*).

- HMULDC's wetland consultant noted that there is possible evidence of chemical contamination in the former pond area of Wetland Area A (see page 9 of the site reconnaissance and wetland investigation report prepared for HMULDC by Wetland and Environmental Technology, Inc. (WET), titled *Site Reconnaissance Visit and Wetland Inspection, Former Diamond Head Oil Refinery*, November 17, 2000).

These incidents reveal that the 1977 and 1982 removal actions did not eliminate the hazardous substances in Sources 1 and 2 and that environmental risks still exist as a result of hazardous substance migration from sources prior to the removal actions. Based on the evidence provided above, EPA does not consider the requirement for considering removal actions in the HRS scoring of a site, that HMULDC identify the amount of contamination remaining, as explained in the preamble to the HRS (see 55 FR 51567, December 14, 1990), to have been met. Also, the removal actions do not affect the waste quantity, as discussed below. Therefore, both sources at the site are correctly included in the site scoring.

1.1.3.5 Source 1 Hazardous Waste Quantity

Mr. Sarsfield questioned the factual support for EPA's hazardous waste quantity factor value. Mr. Sarsfield commented that the amount of sludge removed from the waste oil lake (Source 1), as presented in the HRS documentation record at proposal, is incorrect. Mr. Sarsfield stated that EPA's estimate of 5 million cubic yards of waste appears to be at least an order of magnitude greater than was excavated and remediated. Mr. Sarsfield noted that five million cubic yards of sludge would be equivalent to a 62-acre area filled 50 feet deep with waste. Mr. Sarsfield explained the implausibility of removing 5 million cubic yards of material in a 12 month period, noting that 830 30-cubic-yard roll-off containers would have to be removed per day for an entire year. Mr. Sarsfield referred to "other documentation" that states 200,000 cubic yards of oily sludge and more than 10 million gallons of oil-contaminated liquid were removed at a cost of $4,918,436. Mr. Sarsfield stated it is more likely that 200,000 to 250,000 cubic yards of oily sludge was removed during that project. Mr. Sarsfield acknowledged that 8 to 10 million gallons of oil/water emulsion were removed from the waste oil lake, but stated that these wastes are no longer at the site and should not be used in determining the volume of the hazardous waste remaining at the site. Mr. Sarsfield concluded that quantities of waste removed should not be included in determining the volume of waste remaining at the site. According to Mr. Sarsfield, not counting these waste would decrease the overall HRS site score to less than 28.5.

In response, EPA agrees that the 5 million cubic yards of sludge removed from Source 1 may not be an accurate estimate of the sludge removed from that source, and thus the hazardous waste quantity for Source 1 has been revised in the HRS documentation record. However, as explained below, the waste

quantity for this source is based on both the sludge and the 9 million gallons of waste oil/emulsion that were once in the source. The estimation of the quantity of waste oil/water emulsion (9 million gallons) associated with Source 1 is correct and is appropriately counted in the source hazardous waste quantity value. With specific regard to the removal of these wastes from Source 1, these responses were not qualifying removals, and thus, the wastes are counted as part of Source 1 hazardous waste quantity. Section 1.1.3.4 of this support document discusses EPA's removal policy.

According to the HRS documentation record as proposed, Source 1 consists of a former surface impoundment which is also referred to as the oil lake, and in 1977, NJDOT began construction of Interstate 280 and reportedly pumped approximately 9 million gallons of waste oil/water emulsion from the lake. In addition, approximately 5 to 6 million cubic yards of oil sludge were removed from the lake by mudwaving and backfilling with compressed sand (page 12 of HRS documentation record). This estimation is based on information provided in Reference 4 of the HRS documentation record, *Final Draft Site Inspection Report Diamond Head Oil Refinery Div., Kearny, New Jersey, Volume 1 and 2*. This information was used to estimate a volume of the waste oil lake to be 5,045,000 cubic yards, which yields a volume assigned value of 2,018,000 for the waste oil lake (page 17 of the HRS documentation record as proposed). As explained on pages 27 and 34 of the HRS documentation record as proposed, this volume combined with the waste quantity estimate of Source 2 gives a pathway hazardous waste quantity factor value of 1,000,000 (See HRS Table 2-5, *Hazardous Waste Quantity Evaluation Equations*).

Mr. Sarsfield acknowledged that between 8 and 10 million gallons of waste oil/water emulsion were likely removed from the 8-acre oil pond in 1977; therefore, the 9 million gallons scored in Source 1 hazardous waste quantity remains. However, regarding the oil sludge estimate, the Agency is using the estimate provided by Mr. Sarsfield of 200,000 cubic yards to determine the hazardous waste quantity for Source 1:

> 9 million gallons = 45,000 cubic yards waste oil/water emulsion (200 gallons = 1 cubic yard (see HRS Table 2-5, *Hazardous Waste Quantity Evaluation Equations*))
> 200,000 cubic yards of oil sludge
> Total = 245,000 cubic yards
> Volume assigned value: 245,000/2.5 = 98,000 (see HRS Table 2-5, *Hazardous Waste Quantity Evaluation Equations*)

This change is reflected in the revised HRS documentation record, and the surface water migration pathway hazardous waste quantity score is reduced from 1,000,000 to 10,000. This has no effect on the overall HRS site score or the site's eligibility for the NPL. The pathway hazardous waste quantity of 10,000 multiplied by the ecosystem toxicity/persistence value factor value of 10,000 (assigned to mercury and PCBs) yields a product of 1×10^8 for the ecosystem toxicity/persistence x hazardous waste quantity factor value[1]. This value multiplied by a bioaccumulation value of 50,000 (assigned to mercury and PCBs) would yield an ecosystem toxicity/persistence x hazardous waste quantity factor value x bioaccumulation value[2] of 1×10^{12}, which according to HRS Table 2-7, *Waste Characteristics Factor Category Values*, is

[1]According to HRS Section 4.1.4.2.3, *Calculation of environmental threat-waste characteristics factor category value*, a maximum of 1×10^8 can be assigned to the ecosystem toxicity/persistence x hazardous waste quantity factor value.

[2]According to HRS Section 4.1.4.2.3, *Calculation of environmental threat-waste characteristics factor category value*, a maximum of 1×10^{12} can be assigned to the ecosystem toxicity/persistence x hazardous waste quantity factor value x bioaccumulation potential factor value.

assigned a waste characteristics factor value of 1,000. According to HRS Table 4-1, *Surface Water Overland/Flood Migration Component Scoresheet*, an observed release factor value of 550, a waste characteristics assigned value of 1,000, and an environmental targets assigned value of 27.5 yield an environmental threat score of 60, the maximum score than can be assigned to the environmental threat component (see also pages 8, 9, and 35 to 38 of HRS documentation record). An environmental threat score of 60, the only component of the surface water migration pathway scored for this site, yields an HRS site score of 30.00.

Further, EPA scored the waste oil lake as a buried/backfilled surface impoundment, not an active impoundment, as suggested by the commenters. The waste removed from the waste oil lake was used to determine an estimate of a one-time volume of the waste oil lake, not what is currently there. The volume (also known as capacity or Tier C measure of hazardous waste quantity) is used in the HRS when the total mass of hazardous constituents or wastestreams cannot be adequately determined for the source (see HRS Sections 2.4.2.1.1, *Hazardous constituent quantity*, and 2.4.2.1.2, *Hazardous wastestream quantity*, and pages 15 to 17 of the HRS documentation record as proposed). The one-time removal of 9 million gallons of waste oil and waste oil/water emulsion from the waste oil lake is certainly much less than the total amount discharged over the life span of the waste oil lake from approximately 1946 until 1979.

Finally, if removal of the 200,000 cubic yards of oil sludge and the 9 million gallons of waste oil/water emulsion were considered in HRS scoring, the proposed surface water migration pathway hazardous waste quantity of 1,000,000 would be reduced to 100. That is, the Source 1 hazardous waste quantity of 2,018,000 would no longer apply (pages 12, 17, 19, and 34 of the HRS documentation record). Source 2 was assigned a hazardous waste quantity of greater than zero. Thus, the surface water migration pathway hazardous waste quantity would be assigned a value of 100 according to the directions of HRS Section 2.4.2.2, *Calculation of hazardous waste quantity factor value.* HRS Section 2.4.2.2 states the following: "If any target for that migration pathway is subject to Level I or Level II concentrations. . . assign either the value from Table 2-6 or a value of 100, whichever is greater, as the hazardous waste quantity factor value for that pathway."[3] The wetlands which were evaluated as targets are subject to Level II concentrations of hazardous substances (see pages 29, 30, and 37 of the HRS documentation record and Section 1.1.3.12 of this support document, *Targets: Wetlands Actual Contamination*).

If Source 1 was not considered in scoring, the surface water environmental threat score, the only component of the surface water migration pathway that was scored for this site, would be reduced from 60 to 58.67 because the waste characteristics component would be reduced from 1000 to 320 (pages 9 and 34 of the HRS documentation record). The ecosystem toxicity/persistence/bioaccumulation factor value would still be supported by the assigned values for PCBs and mercury which were identified in samples collected from Source 2 after the removal activity, or mercury identified in the observed release sediment samples collected from the wetlands (pages 28 to 32 and 33 to 34 of the HRS documentation record). Thus, considering the removal actions at Source 1 in the calculation of the site score; the directions of HRS Section 4.1.4.2.3, *Calculation of environmental threat waste characteristics factor category value*; and pages 33 and 34 of the HRS documentation record, the waste characteristics factor category value would be assigned as follows:

[3] Pages 29 to 31 and 37 of the HRS documentation record as proposed document Level II concentrations of hazardous substances in wetlands.

Ecosystem toxicity/persistence factor value x hazardous waste quantity factor value = 10,000 x 100 = 1×10^6
(Ecosystem toxicity/persistence factor value x hazardous waste quantity factor value) x bioaccumulation potential factor value =
1×10^6 x 50,000 = 5×10^{10}

According to HRS Table 2-7, *Waste Characteristics Factor Category Values*, a waste characteristics product of 5×10^{10} is assigned a value of 320. With a waste characteristics factor category assigned value of 320, an observed release value of 550, and targets score of 27.5, the environmental threat component of the surface water migration pathway would receive an assigned value of 58.67, and the HRS site score would be 29.33 (Section 2.1.1, *Calculation of HRS site score;* HRS Table 4-1, *Surface Water Overland/Flood Migration Component Scoresheet* and pages 9, 37 and 38 of the HRS documentation record).[4] Thus, considering the removal action in scoring would reduced the original HRS site score from 30 to 29.33. This would still be above the 28.50 cutoff for NPL eligibility.

1.1.3.6 Other Potential Sources

Mr. Sarsfield commented that EPA's approach to hazardous waste quantity is incomplete and inconsistent. Mr. Sarsfield stated 7,500 gallons of PCB-contaminated material were removed from the former storage tanks and 27 tons of contaminated soil were disposed off-site in 1982, and neither were included in the HRS scoring calculation.

In response, the HRS does not require scoring all sources at the site if scoring those sources does not change the listing decision. For some sites, data for scoring a source are unavailable, and obtaining these data would be time-consuming or costly. In other cases, data for scoring some sources are available, but will only have a minimal effect on the site score. In still other cases, data on other sources could substantially add to a site score, but would not affect the listing decision. The HRS is a screening model that uses limited resources to determine whether a site should be placed on the NPL for additional investigation and possible Superfund response. A subsequent stage of the Superfund process, the Remedial Investigation (RI), characterizes conditions and hazards at the site more comprehensively.

The HRS is intended to be a "rough list" of prioritized hazardous sites; a "first step in a process--nothing more, nothing less" Eagle Picher Indus. v. EPA, 759 F.2d 922, 932 (D.C. Cir. 1985) (Eagle Picher II). EPA must balance the need to fully characterize a site with the limited resources available to collect and analyze site data. EPA would like to investigate each possible site completely and thoroughly prior to evaluating them for proposal for NPL, but it must reconcile the need for certainty before action with the need for inexpensive, expeditious procedures to identify potentially hazardous sites. The courts have found EPA's approach to solving this conundrum to be "reasonable and fully in accord with Congressional intent." Eagle Picher Industries, Inc. v. EPA, (759 F.2d 905 (D.C. Cir. 1985) Eagle Picher I).

[4] Environmental threat score = (550 x 320 x 27.5) ÷ 82,500 = 58.67
HRS site score = square root of [(58.67^2) ÷ 4] = 29.33

1.1.3.7 Analytical Data Quality

Mr. Sarsfield noted that some "liquid" or "water" samples were listed with milligrams per kilogram (mg/kg) units (e.g., NJJB-LIQ-W2(DUP) and NJJB-LIQ-W3), rather than aqueous units such as milligrams per liter (mg/L). Because of this, Mr. Sarsfield expressed concerns for the accuracy of these and other data. Mr. Sarsfield questioned whether appropriate attenuation factors were used in calculating the reported concentrations and whether correct decimal values were reported for other data. He further stated that the data should be rechecked against the laboratory source information.

In response, EPA considers the analytical data used in HRS scoring to be usable for their intended purpose. Although Mr. Sarsfield commented that "there are a number of results" with problems associated with units, he identifies only two such instances (samples NJJB-LIQ-W2-(DUP) and NJJB-LIQ-W3). These two samples were not used in the HRS documentation record to support the HRS score for the Diamond Head site. Mr. Sarsfield did not specifically identify any other samples with data discrepancies.

Regarding Mr. Sarsfield's concerns about samples NJJB-LIQ-W2-(DUP) and NJJB-LIQ-W3, the units are appropriate and accurate. The matrix, and thus the units, of each sample is ultimately determined by the laboratory that is analyzing the sample. When shipping samples to a laboratory for analysis, the field sample collector is required to fill out, among other forms, a "traffic report" that describes each sample contained in the shipment and the analyses to be performed on each sample. Inorganic traffic reports are used for samples to be analyzed for inorganic analytes and organic traffic reports are included for samples to be analyzed for organic constituents. On each traffic report, there is a "Matrix" box (or field) to be filled out by the field sample collector/shipper. This box is filled qualitatively based on the visual condition of the sample and the judgment of the individual completing the form (*Contract Laboratory Program (CLP) Guidance for Field Samplers*, OSWER 9240.0-35, (EPA, June 2001)). The quantitative determination of the units for analytical sample results is based on different criteria specified in the EPA analytical method. This quantitative determination is made by technicians in the laboratory, yielding accurate units for the sample matrix. These are the units reported in the laboratory data report.

With respect to the two samples questioned by Mr. Sarsfield, EPA's SI indicated that sample NJJB-LIQ-W3 corresponds to a high concentration waste sample from monitoring well 3. This sample stratified into two distinct phases, which were analyzed independently (page 15 of Reference 4 of the HRS documentation record, *Final Draft Site Inspection Report Diamond Head Oil Refinery Div., Kearny, New Jersey, Volume 1 and 2*). The sample can be given only one designation on the traffic report (liquid in this case) although the sample consisted of a liquid and solid phase. If Mr. Sarsfield is referring to the "LIQ" portion of the sample number, the sample number is not used in determining appropriate sample units.

Finally, Mr. Sarsfield provided no support for his concerns about the accuracy of the other data. The questions raised by Mr. Sarsfield about the units of samples NJJB-LIQ-W2(DUP) and NJJB-LIQ-W3 are not relevant to the other samples collected, as the units correspond to the matrix sampled. Mr. Sarsfield's comments about whether appropriate attenuation factors or decimal values are accurate are made in light of his questions about samples NJJB-LIQ-W2-(DUP) and NJJB-LIQ-W3. Because EPA finds no errors in the analytical data units with these two samples (or any others), Mr. Sarsfield's implication that they raise broader data quality concerns is unfounded.

1.1.3.8 Contamination Below Regulatory Limits

Mr. Sarsfield stated that soil and sediment sample concentrations were not compared to applicable soil cleanup standards. Similarly, he claimed water sample concentrations were not compared to applicable water quality standards. Mr. Sarsfield questioned EPA's use of biased sample locations to estimate the extent of specific areas of concern (sources or observed releases) and contaminant concentrations at the site. Mr. Sarsfield referred to EPA Region III's Risk Based Criteria (RBC) for industrial soil and NJDEP's non-residential soil cleanup criteria as regulatory standards that EPA ignored in assigning a hazardous waste quantity factor value for HRS scoring. Mr. Sarsfield also questioned whether soil sample concentrations are compared to standards for industrial or residential use. Mr. Sarsfield commented that hazardous waste quantities should be based only on those locations where EPA or State standards are exceeded.

In response, that the concentrations of certain hazardous substances detected in soil, sediment, and surface water do not exceed regulatory standards does not eliminate those hazardous substance releases from consideration when evaluating a site using the HRS either in associating those substances with a source or in identifying an observed release to surface water. Regarding source scoring, the HRS (40 CFR Part 300, Appendix A, Section 2.2.1, *Identify Sources*) simply states "For the three migration pathways, identify the sources at the site that contain hazardous substances." Comparing hazardous substance concentrations to regulatory limits is not required in the HRS to identify the hazardous substances present in a source.

Regarding the identification of observed releases below regulatory limits, on July 16, 1982, when responding to public comments on the proposed (original) HRS (47 FR 31188), and again on September 8, 1983 (48 FR 40665), the Agency rejected the idea that releases within regulatory limits should not be considered "observed releases" under the HRS. As the Agency noted in 1982,

> emission or effluent limits do not necessarily represent levels which cause no harm to public health or the environment. These limitations are frequently established on the basis of economic impacts or achievability.

By contrast, an observed release represents a 100 percent likelihood that substances can migrate from the site (47 FR 31188, July 16, 1982).

Section 2.3 of the HRS (55 FR 51589, December 14, 1990) states that an observed release can be established either by direct observation or by chemical analysis. An observed release by chemical analysis has occurred when a contaminant is measured significantly above background level if some portion of the release is attributable to the site. Even though levels may be lower than regulatory limits, an observed release has nevertheless occurred if the measured levels are significantly higher than background levels. The HRS does, however, consider whether releases are above regulatory limits in evaluating target populations, increasing by a factor of 10 the weight assigned populations exposed to contaminants above regulatory benchmarks.

Of course, the observed release factor alone is not intended to reflect the hazard presented by the particular release. Instead, the hazard of the site is approximated by the total HRS score, which incorporates the observed release factors with other factors such as waste characteristics (including waste quantity, toxicity, and persistence) and targets. This total HRS score reflects the hazard of the site relative only to the other sites that have been scored. The actual degree of contamination and its effects are more fully determined during the Remedial Investigation.

EPA notes that, as discussed above, the HRS does compare observed release concentrations to certain regulatory benchmarks when weighting the level of contamination of an actually contaminated target (see, HRS Section 2.5.2, *Comparison to benchmarks*). However, at the Diamond Head site, Level II and potentially contaminated targets were scored, and these levels of contamination need not be compared to regulatory benchmarks (pages 37 and 38 of the HRS documentation record as proposed).

Regarding Mr. Sarsfield's comment about biased sampling in areas of concern, sources, or observed release media at a site, for HRS purposes, consistent with it being a screening tool, EPA attempts to identify the highest concentrations of hazardous substances at the site with a limited number of samples. In the case with contaminated soils, areas where soil is visibly stained are more likely to be sampled than areas where the soil is not stained. As referred to by Mr. Sarsfield, "biased samples" protect against an EPA decision to not take action at sites that do warrant placement on the NPL for further investigation and possible cleanup. The purpose of a pre-NPL sampling effort, such as the SI, is not to characterize the nature and extent of contamination at the site, but rather to give an indication of whether such further investigation is necessary. Therefore, applying "cleanup criteria" at this stage of the Superfund investigation process, as suggested by Mr. Sarsfield, would be premature. The HRS was not designed to determine whether cleanup is necessary, but rather whether further remedial investigation is warranted. In the case of the Diamond Head site, EPA's documentation record and decision to propose the site to the NPL show the need for further investigation and, if necessary, cleanup.

Actual cleanup decisions are made after the completion of a remedial investigation. This is conducted as a separate step in the Superfund process. The regulatory levels referred to by Mr. Sarsfield are intended to be compared to the analytical data resulting from a complete site characterization when adequate representative sampling is performed and a decision about cleanup and technology selection is made.

1.1.3.9 Identification of Surface Water (Wetlands)

HMULDC commented on various aspects of wetland identification for the surface water migration pathway for the Diamond Head site. After obtaining a wetlands consultant and conducting a site reconnaissance on October 25, 2000, HMULDC commented that the location and extent of the wetlands observed by its consultant differed significantly from that depicted in the Nova survey (the Nova survey is the wetland delineation used by EPA to delineate the wetlands extent for HRS scoring, Reference 9 of the HRS documentation record as proposed by EPA, *Report for Harbor Consultants to Conduct a Non-Tidal Wetland Delineation on a Tract Designated as: Block 294, Lots 3,14, and 15, Kearny, NJ*). HMULDC also questioned the wetland boundaries depicted on Figure 3 of the ESI (Figure 3 of the HRS documentation record).

To support its comments on the surface water pathway, HMULDC cited a report prepared by its wetlands consultant, Wetland and Environmental Technology, Inc. (WET), titled *Site Reconnaissance Visit and Wetland Inspection, Former Diamond Head Oil Refinery*, November 17, 2000 (hereafter referred to as the WET wetlands inspection report). HMULDC commented that Wetland A and Wetland C are not connected and that Wetland C is isolated and occurs as discontinuous pockets, reducing the extent of the wetland. In addition, HMULDC asserted that the unnamed drainage ditch that flows along the eastern and southern site boundaries, immediately adjacent to I-280, does not meet the definition of a wetland, and it is not in hydraulic connection with Wetland C. HMULDC also pointed to alleged discrepancies between the Nova and Weston wetlands maps (Figure 3 of the HRS documentation record).

In response, as is discussed below, wetlands area "C," for HRS purposes, is correctly identified as a continuous wetland contiguous with wetlands area A and with Frank's Creek. The unnamed drainage ditch identified by HMULDC is not considered part of the surface water pathway for the site, and, thus, comments on it are not relevant to the listing decision.

In the HRS documentation record at proposal, EPA identified the entire wetland area C as a continuous wetland and part of the surface water pathway for the site. The HRS identifies eligible surface water categories, including wetlands, for evaluation in the surface water pathway in Section 4.0.2, *Surface water categories* (40 CFR Part 300, Appendix A). One eligible surface water category is "Perennially flowing water . . . and wetlands contiguous to these flowing waters." Since Wetland C is contiguous to Franks Creek, it is eligible to be part of the surface water pathway. For the purpose of identifying wetlands, the HRS references the 40 CFR 230.3 definition of wetlands in HRS Table 4-24, *Wetlands Rating Values For Surface Water Migration*. This reference states that wetlands are:

> those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

The classification of areas A and C as wetlands for HRS purposes is based on the soil, the hydric soil classification, and the hydric plant classification in these two areas. These wetlands were identified and delineated by EPA based on a complete non-tidal wetland delineation prepared by Nova Consultants Ltd. and an accompanying engineer-approved Wetlands Location Map (referred to by HMULDC as the 1990 Site Plan) showing the surveyed wetlands as delineated by Nova (pages 10 and 28 of the HRS documentation record; pages 3 to 5 of Reference 9 of the HRS documentation record, *Report for Harbor Consultants to Conduct a Non-Tidal Wetland Delineation on a Tract Designated as: Block 294, Lots 3, 14, and 15, Kearny, NJ*). It used the results of 10 soil borings with their associated soil type, hydrology, and vegetation, which are presented on pages 7 to 16 of Reference 9 of the HRS documentation record). According to page 18 of Reference 9, which summarizes the field observations made in the classification of the wetlands at the Diamond Head Oil Refinery Div., the "Palustrine habitat conditions within the tract exist as two disjunct areas located within the southerly half of the site designated as area 'A' and area 'C'." Thus, wetlands A and C are classified as palustrine wetlands. Palustrine wetlands are among the HRS wetland types that meet the wetland definition as cited in 40 CFR 230.3 as they normally support emergent wetland vegetation typically adapted for life in saturated soil conditions (see pages A-20 and A-22 of the *HRS Guidance Manual* for further discussion).

As discussed on pages 28 and 37, and Figure 3 of the HRS documentation record at proposal, Wetland area C is contiguous to Frank's Creek and Wetland area A. The extent of Wetland C was measured from the two PPEs into Wetland C to the observed release sample SD16. The first segment of the Wetland C measurement begins at the eastern end of Wetland C at or near Wetland C survey point C-1 and extends to sediment sample SD16. This segment measured 555 feet (pages 28, 37, and Figure 3 of the HRS documentation record; Reference 9 of the HRS documentation record). The second segment of Wetland C measurement begins at the western PPE into Wetland C at or near Wetland C survey point C-49 and extends to sediment sample SD16. This segment measured 480 feet (pages 28, 37, and Figure 3 of the HRS documentation record; References 9 of the HRS documentation record). Together, the two segments of Wetland C yield a wetland frontage of 0.20 miles.

1.1.3.9.1 Wetland Extent

Regarding discrepancies between the HMULDC's contractor's, WET, delineation of the extent of the wetlands and EPA's delineation based on the Nova study (Reference 9 of the HRS documentation record), EPA does not see that the two are substantially different. In fact, HMULDC seems to misinterpret its own study.

First, the Agency notes the two studies were performed based on different information. The WET wetlands inspection report, prepared for HMULDC, is based on a map review and a one-day field reconnaissance visit in late October, whereas the wetland delineation used by EPA to score wetlands in the HRS documentation record is based on a complete non-tidal wetland delineation prepared by Nova Consultants Ltd. and an accompanying engineer-approved Wetlands Location Map (referred to by HMULDC as the 1990 Site Plan) showing the surveyed wetlands as delineated by Nova (pages 10 and 28 of the HRS documentation record; Reference 9 of the HRS documentation record; page 1 of *Site Reconnaissance Visit and Wetland Inspection, former Diamond Oil Head Refinery, Kearny, Hudson County, New Jersey* (prepared by WET for HMULDC and provided as an attachment to HMULDC's comment on the listing of this site)). The Nova delineation is based on a more comprehensive analysis; therefore, it more thoroughly documents the presence and extent of wetlands as defined in 40 CFR 230.3, the basis for scoring wetlands in the HRS.

In considering HMULDC's comments on the discrepancies between the 1990 Site Plan and the Weston wetland map (Figure 3 of the HRS documentation record), it is important to understand the purpose of each map. The 1990 Site Plan is a surveyed map of wetland locations and boundaries based on survey markers and wetland delineation results. It was completed and signed by a State-certified engineer. In fact, the WET wetlands inspection report states that the "contours on the 1990 Site Plan more typically represent the actual topography of the site. . ." than the USGS quadrangle. The Weston wetland map (Figure 3 of the HRS documentation record as proposed) is not intended to reflect the exact location of wetlands or sample collection points. Rather, this map is used to illustrate on a single diagram several site characteristics important to HRS scoring such as sample locations, source locations, general wetland locations, and a general site layout. Thus, the HRS factor values and site characteristics are not based on the Weston map. The more precise sample location descriptions are provided in Reference 11 of the HRS documentation record, *ESI Field Logbook- Diamond Head Oil Refinery Div* (the field logbook), and precise wetland locations are in the 1990 Site Plan and the Nova wetland delineation. The combined use of the Weston map (Figure 3 of the HRS documentation record), the field log book (Reference 11 of the HRS documentation record, *ESI Field Logbook - Diamond Head Oil Refinery Div*.), the 1990 Site Plan (included in Reference 9 of the HRS documentation record), and the Nova wetland delineation (Reference 9 of the HRS documentation record, *Report for Harbor Consultants to Conduct a Non-Tidal Wetland Delineation on a Tract Designated as: Block 294, Lots 3, 14, and 15, Kearny, NJ*) provide adequate representation of the site.

Also regarding the supposed differences in the two studies, EPA notes that, in fact, the WET report clearly supports the Nova results by stating on page 5 that "[i]n general, the site reconnaissance showed that the wetlands are approximately the same size and configuration as shown in the 1990 Site Plan."

1.1.3.9.2 Wetland C Continuity

Regarding the assertion that Wetland C is discontinuous, EPA disagrees with HMULDC that Wetland C exists as "discontinuous pockets." In fact, HMULDC's wetland consultant WET refers to Wetlands Area C as a single wetland in its report to HMULDC (see page 7 of the WET report). Reference 9 of the HRS documentation record, *Report for Harbor Consultants to Conduct a Non-Tidal Wetland Delineation on a Tract Designated as: Block 294, Lots 3, 14, and 15, Kearny, NJ,* states that "Wetland Area C is representative of a drainage swale containing PEM (palustrine emergent) habitat characteristics found along the southerly side boundary with a confluence which runs along the western boundary. Both drain southerly and outbound." This confirms a continuous "Y" shaped wetland from survey points C-1 to C-49 as
wetlands and provides evidence that the palustrine emergent wetlands extend off the property to Frank's Creek. This is also supported by Reference 13 of the HRS documentation record, *Project Note to Diamond Head Oil Refinery Div. File, Subject: Non-Contaminated Portion of Wetland C.*

Although HMULDC presents evidence of a lack of a "ditch" in the eastern branch of Wetland Area C (depicted as survey points C-1 to C-16 in Reference 9 of the HRS documentation record, *Report for Harbor Consultants to Conduct a Non-Tidal Wetland Delineation on a Tract Designated as: Block 294, Lots 3, 14, and 15, Kearny, NJ*), HMULDC provides no specific evidence to dispute the presence of wetlands in any part of Wetland Area C, as evaluated in the HRS documentation record as proposed. HMULDC and WET continuously refer to "ditches" associated with Wetland C. However, consistent with the above definition of wetlands, wetland surface water bodies may exist without such surface water features, instead relying on a shallow ground water table to support wetland hydrology. The extent of the wetlands was appropriately determined (see pages 28 and 37 of the HRS documentation record as proposed).

EPA also notes that, again, HMULDC misinterpreted the WET wetlands inspection report by stating that Wetland C occurs as discontinuous small pockets of wetlands. The WET wetlands inspection report continuously refers to Wetland Area C as a single wetland. The extent of Wetland C is estimated in HMULDC's wetland inspection report as 0.83 acres in size, implying that it is continuous. (The WET report also notes that ". . . there was no evidence of recent grading or other site work that may have changed the site topography since the 1990 survey." This confirms that the 1990 Nova wetland delineation still applied to site conditions in October 2000.)

1.1.3.9.3 Unnamed Ditch

Regarding HMULDC's comment concerning the unnamed drainage that flows along the eastern and southern site boundaries, this drainage is not evaluated as part of the surface water pathway in EPA's HRS evaluation. EPA concurs with HMULDC that this drainage ditch is separated from Wetland C by a topographic rise. However, because this ditch is not part of the surface water pathway HRS evaluation, comments regarding whether this drainage ditch is a wetland have no relevance to or impact on the site's eligibility for the NPL.

1.1.3.10 Observed Release Surface Water Sample Locations

HMULDC asserted that the sediment samples used by EPA to document the observed release to the surface water migration pathway (e.g., SD16, SD17, and SD18) were not located in Wetland C. It claimed that the locations cannot be confirmed, because the locations were not surveyed and they (particularly SD16) do not appear to be in Wetland C. HMULDC further commented that the basis for mapping wetlands and sample locations is not provided.

In response, EPA has provided the information necessary to determine that the locations of observed release wetland sediment samples SD16, SD17, and SD18 are in Wetland C. According to page 28 of the HRS documentation record, sediment samples were collected from Wetland C during the expanded site inspection (ESI) in December 1999, and Wetland C extends along the southern and western boundaries of the site property. This information is included in Reference 11 of the HRS documentation record, *ESI Field Logbook - Diamond Head Oil Refinery Div.* (Weston, 1999). As documented in Reference 11 of the HRS documentation record, the wetland sediment sample locations were field screened and field verified against the Nova surveyed wetland flags (C-1 to C-49) on November 30 and December 1, 1999 to select wetland locations from which to collect CLP samples on the following day. The field screening survey results presented in Reference 11 (page 7) of the HRS documentation record as proposed (the field logbook for the SI) document sediment samples SD16, SD17, and SD18 within the boundaries of Wetland C (as defined in Section 1.1.3.9 of this support document). Page 8 of Weston's field notes (Reference 11 of the HRS documentation as proposed) shows that field screening sediment locations FSD26, FSD27, and FSD28 were collected from Wetland C at Nova survey points C-27, C-29, and C-14, respectively. Page 10 of the same reference notes that sediment samples SD16, SD17, and SD18 were collected at field screening locations FSD28, FSD27, and FSD26, respectively. Because Nova survey points C-27, C-29, and C-14 meet the HRS definition of a palustrine emergent wetland (see discussion in Section 1.1.3.9), sediment samples SD16, SD17, and SD18 each were collected from within the boundaries of Wetland C.

1.1.3.11 Observed Release Attribution

The HMULDC stated that several concrete chutes serve to funnel runoff from the roadway into the ditch, and the water and sediment quality in the drainage adjacent to I-280 is likely to be severely impaired by highway runoff from I-280, including road salt, oil, gas, and highway spills.

In response, while the Agency recognizes that I-280 is adjacent to the southern and eastern boundary of the property, the hazardous substances detected in the wetlands at the site can be attributed to the Diamond Head site. According to HRS Section 2.3, *Likelihood of release*, "[t]he minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance in the media significantly above background level. Further, *some portion* of the release is attributable to the site." (Emphasis added).

As stated in the site summary in the front of the HRS documentation record and on pages 2 to 4 of Reference 4 of the HRS documentation record, *Final Draft Site Inspection Report, Diamond Head Oil Refinery Div., Kearny, New Jersey*, "During facility operations, two aboveground storage tanks . . . and possibly underground pits were used to store oily waste. These wastes were intermittently discharged directly to adjacent properties, including the wetland area to the south of the site, creating a [waste] 'oil lake.'" Page 31 of the HRS documentation record further notes that "[a]nalytical results from sediment

samples collected from the on-site wetland . . . which is believed to be have been a part of the [waste] oil lake, indicated concentrations of lead up to 84,300J[5] mg/kg, mercury up to 3.9 mg/kg, and zinc up to 17,700J mg/kg." This information, as well as the significant increase of contamination above background levels support at least partial attribution of the observed release hazardous substance to the site (see pages 28 to 32 of the HRS documentation record).

The cement runoff "chutes" referred to by HMULDC collect runoff from I-280 and convey it to a drainage ditch situated between I-280 and a berm that runs the length of the southern and eastern portion of the site. The berm is only broken further north, along the eastern side of the property where a ramp leading to I-280 is located (see the Nova 1990 Site Plan included in Reference 9, of the HRS documentation record *Report for Harbor Consultants to Conduct a Non-Tidal Wetland Delineation on a Tract Designated as: Block 294, Lots 3, 14, and 15, Kearny, NJ*). Therefore, the unnamed ditch that receives runoff from I-280 is hydraulically disconnected from Wetland C by a raised berm (see Section 1.1.3.9 of this support document). Any hazardous substances originating from I-280 would impact the unnamed drainage ditch, not Wetland C (see Section 1.1.3.9 of this support document regarding the unnamed ditch). Thus, it is unlikely that highway runoff has "severely" impacted the site.

The Agency also points out that the three background samples (SD01, SD02, and SD03) were collected from an off-site wetland area that has similar characteristics to on-site wetlands (pages 28 and 29 of the HRS documentation record). This background wetland is also adjacent to a ramp to I-280 (pages 6, 10, and 16 of Reference 11 of the HRS documentation record, *ESI Field Logbook - Diamond Head Oil Refinery Div.*). Therefore, background sediment sample results should account for concentrations of I-280 related runoff contamination.

1.1.3.12 Targets: Wetlands Actual Contamination

HMULDC considered EPA's HRS scoring of sensitive environments (wetlands) as actually contaminated factually inaccurate and inconsistent with HRS Section 4.1.4.3.1, *Sensitive Environments*. To support this assertion, HMULDC commented that the "value" of the wetlands is not considered by the HRS. HMULDC noted that its wetlands consultant, WET, observed no bird or other wildlife signs at Wetland A, implying that it has a low ecological value. HMULDC also asserted that the great variety of plant life and the presence of several sensitive species is evidence that the contamination from the site is exhibiting little or no impact on the wetlands. If significant contamination existed, HMULDC contended that sensitive vegetation would not be thriving. Therefore, HMULDC implied that contamination in the on-site wetlands cannot be as significant as EPA contended. HMULDC commented that the HRS scoring process does not take into account the magnitude of the contamination concentrations. HMULDC also commented that if sediment samples SD16, SD17, and SD18 are not in the wetland, then the observed release and Level II concentrations are not documented. HMULDC concluded that the cumulative impact of no wetland contamination is that the HRS score would drop below the 28.50 cutoff and the site would be ineligible for the NPL.

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[5] J= Estimated. Concentration of analyte estimated because sample is less than 50% but greater than 10% solids (pages 6, 54, and 91 of Reference 7 of the HRS documentation record, *Record of Communication to Smita Sumbaly, Subject: Quality Assured Data, Diamond Head Oil Refinery, Case 27633,(includes inorganic laboratory data).*

In response, regarding HMULDC's comment about considering the actual value of the wetland in HRS scoring, because the HRS is a regulation promulgated by EPA in 1990, comments on the HRS itself are too late for consideration (*RSR v. EPA*, U.S. Court of Appeals (No. 95-1559, D. C. Cir., Jan. 3, 1997); 40 CFR Part 300, Appendix A, December 14, 1990). The Court held in *RSR v. EPA*, that " Section 113(a) of CERCLA states that all CERCLA regulations must be challenged 'within ninety days from the date of promulgation of such regulations.' 42 U.S.C. 9613(a) (1994)." Because HMULDC did not raise its challenge to the wetlands evaluation based on its consideration of "low ecological" value until now, its challenge is barred by CERCLA Section 113(a), and, thus, is untimely. The manner in which wetlands are scored for HRS purposes has already been promulgated in the HRS (40 CFR Part 300, Appendix A, December 14, 1990).

In addition, the HRS does consider wetland values by using the 40 CFR 230.3 definition of wetlands, which considers wetland values, such as the need to support wetland vegetation. HMULDC implies that animal habitat (or visual evidence thereof) is the only value that EPA should consider when scoring wetlands. Wetlands provide many other important functions and values besides animal habitat. Habitat for sensitive plant species, flood prevention and water quality improvement are just three other important values that Wetlands A and C provide and seem to be ignored by HMULDC. HMULDC acknowledges that Wetlands A and C have a great variety of plant life and thriving vegetative communities. HMULDC further notes that the wetlands are host to sensitive wetland plant species such as willows, spike rush and marsh mallow. These observations made by HMULDC acknowledge other values of Wetlands A and C. Finally, the lack of obvious visual signs of animal habitat observed by HMULDC on October 25, 2000 does not preclude Wetlands A and C from providing animal habitat during other seasons. Seasonal migrants may be absent in late October and visual signs can be erased by rains, winds, or flooding.

With regard to actual contamination of Wetland C, EPA appropriately assigned the Wetlands A and C Level II contamination according to HRS Section 2.5, *Targets*. HRS Section 2.5 states to determine Level II contamination of targets as follows: "Media-specific concentrations for the target meet the criteria for an observed release (or observed contamination) for the pathway, but are less than media-specific benchmarks. If none of the hazardous substances eligible to be evaluated for the sampling location has an applicable benchmark, assign Level II to the actual contamination at the sampling location, ..." Lead, zinc, and mercury were detected at Level II concentration in samples SD16, SD17, and SD18 in Wetland C (pages 29, 30, and 37 of the HRS documentation record). The HRS has no requirement that visual vegetation stress be present for an observed release to be documented. In fact, species (plant or animal) other than those observed by HMULDC could be absent because of wetland contamination. As previously discussed, an observed release by chemical analysis has occurred when a contaminant is measured significantly above the background level and some portion of the release is attributable to the site. Even though levels may be lower than regulatory limits, an observed release has nevertheless occurred if the measured levels are significantly higher than background levels.

1.1.4 Conclusion

The original HRS score for the Diamond Head Oil Refinery Div. site was 30.00. Based on the above response to comments, the score does not change. Changes to the hazardous waste quantity calculation based on comments addressed in Section 1.1.3.5 of this support document are reflected in a revised version of the HRS documentation record. These changes have no effect on the HRS site score. The final scores for the Diamond Head Oil Refinery Div. site are:

Ground Water	Not Scored
Surface Water	60.00
Soil Exposure	Not Scored
Air	Not Scored
HRS Score	30.00

1.2 Quanta Resources, Edgewater, New Jersey

1.2.1 List of Commenters/Correspondents

NPL-U35-3-2-1-R2	Correspondence dated February 28, 2001 from David P. Cooke, Assistant General Counsel, Honeywell
NPL-U35-3-2-2-R2	Correspondence dated March 1, 2001 from Peter J. Fontaine, Montgomery, McCracken, Walker & Rhoads, LLP, Cherry Hill, NJ on behalf of Thomas Heagney
NPL-U35-3-2-3-R2	Comment dated March 12, 2001 from Norman W. Bernstein, N.W. Bernstein & Associates, LLC, New York, NY on behalf of the Quanta Edgewater Working Group
NPL-U35-3-2-4-R2	Comment dated March 9, 2001 from David P. Cooke, Assistant General Counsel, Honeywell
NPL-U35-3-2-5-R2	Comment dated March 12, 2001 from Peter J. Fontaine, Montgomery, McCracken, Walker & Rhoads, LLP, Cherry Hill, NJ on behalf of Thomas Heagney
NPL-U35-3-2-L1-R2	Comment dated March 12, 2001 from Jeffrey W. Cappola, DeCotiis, Fitzpatrick, Gluck, Hayden & Cole, LLP, Teaneck, NJ on behalf of the Estate of James Frola
NPL-U35-5-2-R2	Correspondence dated November 13, 2000 from The Honorable Christine Todd Whitman, Governor of New Jersey
NPL-U35-5-6-R2	Correspondence dated March 8, 2001 from Stephen Caldwell, Acting Director, State, Tribal and Site Identification Center, USEPA
NPL-U35-5-7-R2	Correspondence dated March 8, 2001 from Stephen Caldwell, Acting Director, State, Tribal and Site Identification Center, USEPA

1.2.2 Site Description

The Quanta Resources site is located along the Hudson River in a mixed commercial and residential area in Edgewater, Bergen County, New Jersey. The facility property is bordered to the north by the former Celotex Industrial Park, to the south by the former Spencer-Kellogg Industrial Park, to the west by Old River Road, and to the east by the Hudson River. However, these property boundaries do not necessarily reflect the area of the site for CERCLA response purposes.

Allied Chemical Corporation, Asphalt Division (subsequently Allied-Signal and then acquired by Honeywell, Inc.) operated a coal tar processing plant on the property from at least the 1930s until 1974. In 1974, Allied sold the property to Mr. James Frola and Mr. Albert Von Dohln. In 1977, Mr. Frola and Mr.

Von Dohln leased the property to E.R.P. Corporation (E.R.P.) for the storage and recycling of oil. Shortly thereafter, E.R.P. assigned its lease to Edgewater Terminals, Incorporated. Quanta Resources Corporation obtained usage of the property through transfer of the lease from Edgewater Terminals, Incorporated in July 1980.

In 1981, the New Jersey Department of Environmental Protection (NJDEP) forced the closing of the Quanta Resources facility when it was discovered that the storage tanks contained large quantities of oil with polychlorinated biphenyl (PCB) concentrations as high as 260 parts per million (ppm). The site had 61 above-ground storage tanks (ASTs) with a total capacity of 9 million gallons, an unknown number of underground storage tanks (USTs), and numerous underground pipes. These tanks were used to store oil, tar, asphalt, sludge, process water, and other unknown liquids.

Removal actions were conducted at the site between 1984 and 1988 under the oversight of EPA. The removal activities focused on the cleaning and decommissioning of the ASTs and USTs. In addition, some underground piping and soils containing coal tar were removed from the site. In 1998 and 1999, a Removal Site Investigation (RSI) was conducted at the site by Allied-Signal pursuant to an Administrative Order on Consent. This investigation included the collection of sediment samples from the Hudson River, surface and subsurface soil samples, and ground water samples. Based on the results of these activities, heavy end coal tar contamination was estimated to extend from west of New River Road to approximately 750 feet into the Hudson River.

The human food chain and environmental threats of the overland flow/flood component of the surface water migration pathway are scored. The discharge of heavy end coal tar contamination containing organics and PAHs is evaluated as Source 1. Hazardous substances are associated with Source 1 based on on-site soil samples, an on-site test pit waste sample, and on sediment sampling from the river. Soil contaminated with PAHs and arsenic is evaluated as Source 2. Both sources are assigned a hazardous waste quantity of unknown, but greater than zero, based on contamination found in sources.

An observed release by direct observation to the Hudson River has been documented. Lenses of heavy end coal tar have been observed in the river sediments and are present at depth. Analysis of these sediments documents elevated concentrations of PAHs, such as benzo(a)pyrene, benz(a)anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, and dibenz(a,h)anthracene. The Quanta Resources RSI estimates that heavy end coal tar contamination extends into the Hudson River for approximately 750 feet.

The Hudson River is evaluated as a fishery based on the observation of people fishing from an upstream pier and documentation that a gillnetter nets the area for shad. The Hudson River is evaluated as a State designated area for protection or maintenance of aquatic life. The Hudson River is also a designated American Heritage River and included in the State of New Jersey's Harbor Estuary Program.

1.2.3 Summary of Comments/Correspondence

The Governor of New Jersey at the time of proposal, Governor Christine Todd Whitman, recommended listing the Quanta Resources site on the NPL in a letter dated November 13, 2000.

On February 28, 2001, David P. Cooke (herein referred to as Honeywell), Assistant General Counsel for Honeywell, Inc., requested that the comment period be extended from March 12, 2001, to May 12, 2001. On March 1, 2001, Peter J. Fontaine of Montgomery, McCracken, Walker & Rhoads also requested a 60-

day extension of the comment period on behalf of Mr. Thomas Heagney (herein referred to as Mr. Heagney). These requests were denied by EPA, and the comment period ended on March 12, 2001.

On March 12, 2001, Norman W. Bernstein of N.W. Bernstein & Associates, LLC, submitted comments opposing the listing of the Quanta Resources site on behalf of the Quanta Edgewater Working Group (herein referred to as QEWG). Mr. Bernstein stated that this organization ". . . consists of companies that the Environmental Protection Agency ('EPA') has previously asserted are Potentially Responsible Parties ('PRPs') in connection with the Site . . ." Although the parties to QEWG were not disclosed, Mr. Bernstein further defined the group as including "companies that were connected to the Site by EPA by reason of a waste oil recycling facility that operated on the Site from about 1974 through the early 1980s." Throughout its letter, QEWG referred to the Quanta Resources site as the "Quanta Edgewater Site." QEWG contended that the basis for listing Quanta Resources on the NPL is the sheen observed on the Hudson River. In opposing the listing, QEWG also alleged that the true rationale for listing the Quanta Resources site is the contamination present in the sediments of the Hudson River and that this sediment contamination was not included in the HRS scoring for the site nor disclosed in the proposed listing. QEWG thus drew the conclusion that the public has not been afforded notice or a meaningful opportunity to comment on EPA's true rationale for listing Quanta Resources. Therefore, QEWG contended that the current basis for listing, as QEWG perceives it, subverts "the notice and comment protections required by the Administrative Procedures Act (APA) and principles of Constitutional Due Process that the requirements of Notice and Comment are in part intended to address." QEWG contested the HRS scoring of the overland/flood component of the surface water migration pathway as being inappropriate and contended that the EPA has not provided adequate documentation of the presence of a fishery within the bounds of the observed release. QEWG stated that, without the presence of a fishery, the site does not qualify for the NPL based on an HRS score.

Honeywell submitted comments in opposition to the listing on March 9, 2001. Honeywell stated that the new Governor of New Jersey, Governor Donald DiFrancesco, has not given concurrence for the listing. Honeywell claimed that the site does not present an imminent risk to public health; that the only issue is an ecological concern regarding sediment contamination in a small embayment. Further, Honeywell purported that the detection of contamination in the sediments of a small embayment is not the "kind of event that warrants major federal intervention." Honeywell also stated that, because several removal actions have already been identified for the site, listing Quanta Resources would be contrary to what Honeywell stated is EPA's policy of using placement on the NPL as a "last resort."
Mr. Heagney submitted comments in opposition to the listing on March 12, 2001. Mr. Heagney explained that he is a developer with an "Agreement of Sale and Purchase" to acquire a 5.3 acre portion of the site. Mr. Heagney expressed concerns that an NPL listing will diminish the value of the property and adjacent properties owned by Mr. Heagney. Mr. Heagney also stated that he has a plan to address contamination at the site. Mr. Heagney proposed that the Quanta Resources site is more appropriately addressed through non-time-critical (NTC) removal actions using presumptive remedies consistent with the Superfund Accelerated Cleanup Model (SACM) and that the site should be considered for brownfield redevelopment. In consideration of the proposal for brownfield redevelopment, Mr. Heagney contended that listing Quanta Resources on the NPL is contrary to the policies of Governor Donald DiFrancesco and President Bush, both of whom support brownfield redevelopment.

On March 13, 2001, Jeffrey W. Cappola of DeCotiis, Fitzpatrick, Gluck, Hayden & Cole, LLP, submitted late comments, received after the end of the comment period on March 12, 2001, opposing the listing on

behalf of the Estate of James Frola (the Estate), the current owner of the Quanta Resources property.[6] The Estate contended that it was not advised of the contamination at the time it acquired the property from Allied Chemical in 1974. Therefore, according to the Estate, it is an innocent purchaser of the property and the true responsibility for the contamination present at the site lay with Allied Chemical (now Honeywell). The Estate noted that it is currently negotiating a sale of the property to Mr. Heagney, who has proposed cleanup measures. The Estate contended that an NPL listing will negatively affect its ability to sell the property and proposed that EPA issue a directive to Honeywell to complete remediation of the site in a specified time limit.

All commenters contended that the listing will unnecessarily delay the cleanup of the site and will negatively impact redevelopment and revitalization plans for the area.

1.2.3.1 Requests for Extension

On February 28, 2001, Honeywell requested a 60-day extension of the comment period. Honeywell claimed that the site does not pose any imminent risk requiring immediate action, thus implying that an extension of the comment period would not exacerbate any risk to human health. Honeywell requested the extension to provide sufficient time to review the effects of an NPL listing on future development and utilization activities and to ascertain the position of Governor Donald DiFrancesco. Honeywell also stated that it requested the extension in consideration of a meeting with EPA scheduled for March 13, 2001, and noted that discussions at this meeting would be relevant to the proposed NPL listing. Honeywell claimed that an extension of the comment period would be consistent with President Bush's memorandum directing Agencies "to postpone for 60 days the effective date of all regulations (specifically including proposed rules) that were published but have not yet taken effect."

On March 1, 2001, Mr. Heagney requested a 60-day extension of the comment period in order to discuss a comprehensive redevelopment plan for the site. Mr. Heagney described his proposed cleanup actions, stating that the plan would "adequately resolve the basis for EPA's proposed listing decision." Mr. Heagney stated that an NPL listing would delay any redevelopment for at least four years and that the extension was needed to fully explore the complex issues related to NPL listing.

In response, the requests for an extension were denied after careful review. EPA determined that the commenters had appropriate and timely access to the materials supporting the proposed listing of Quanta Resources and had presented an insufficient rationale for an extension to the comment period. In letters to these commenters, Stephen Caldwell, Acting Director, State, Tribal, and Site Identification Center, explained that "[i]t is EPA's policy to extend the comment period only on a site-specific basis for procedural errors, such as missing references in the public docket. There were no significant procedural errors that can be verified in this case" (see NPL-U35-5-6-R2 and NPL-U35-5-7-R2). The comments submitted on March 13, 2001, after the close of the comment period, by the Estate are addressed in this document.

[6]The Estate of James Frola co-owns the property with Mr. Albert Von Dohln.

1.2.3.2 State Concurrence with Listing

Although Honeywell stated that it was unable to ascertain the position of the new Governor of New Jersey, Governor Donald DiFrancesco, on the listing of the Quanta Resources site, Honeywell contended that Governor DiFrancesco would not necessarily concur with listing this site on the NPL. Honeywell based this assumption on alleged low levels of risk associated with the site and relevant redevelopment issues.

Mr. Heagney also asserted that listing Quanta Resources, as opposed to pursuing alternatives under the brownfields program, is contrary to the policies of both President Bush and Governor DiFrancesco.

In response, for each site being considered for inclusion on the NPL, it is EPA's policy to coordinate with the State in which the site is located and formally request the position of the State on a listing decision early in the site assessment process.[7] Prior to the proposed listing of Quanta Resources, the Governor of New Jersey, Governor Christine Todd Whitman, responded to EPA's request with a written statement recommending listing the Quanta Resources site on the NPL. The State of New Jersey has been actively involved in the ongoing investigations at the site, and the decision to list Quanta Resources was made with full knowledge of all development activities in the area. Once the governor, or State agency, has sent a written request that EPA propose a site for the NPL, no additional correspondence is warranted upon placing that site on the final NPL.[8] Regarding Honeywell's allegation that the site presents a low level of risk, see section 1.2.3.3 of this support document. Regarding Mr. Heagney's assertion that listing Quanta Resources is contrary to the brownfields redevelopment initiative supported by President Bush and Governor DiFrancesco, see section 1.2.3.4 of this support document.

1.2.3.3 Risk

Honeywell claimed that the Quanta Resources site does not present any "imminent risks that would require immediate action." Honeywell quoted Richard Cahill, EPA Region 2, as saying "the remaining contamination at the site does not pose a public health risk." Honeywell also pointed out that EPA did not score the ground water, soil exposure, or air pathways.

Honeywell stated that the only contamination issues that would remain after the completion of proposed removal actions would be ecological concerns regarding the small embayment of the Hudson River adjacent to the Quanta Resources facility property. Honeywell did not consider this small embayment ecologically sensitive or productive. Further, Honeywell stated that "the detection of an unknown amount of contaminated sediment in a small, localized embayment in one portion of a large harbor system is not normally the kind of event that warrants major federal intervention in the form of an NPL listing."

In response, CERCLA Section 105(a)(8)(A) required the establishment of criteria for determining priorities among releases or threatened releases of hazardous substances into the environment. The NCP at

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[7]Memorandum from Elliot P. Laws, Assistant Administrator, Office of Solid Waste and Emergency Response, EPA, to Regional Administrators, Regions I-VII, IX, X; Acting Regional Administrator, Region VIII. Subject: Coordinating with the States on National Priorities List Decisions. November 14, 1996.

[8]Ibid.

40 CFR 300.425(c) subsequently established three methods for placing sites on the NPL.[9] The presence of "imminent risks" requiring "immediate action" is not necessarily a requirement for including a site on the NPL. However, as one of the three methods for placing a site on the NPL, the NCP at 40 CFR 300.425(c)(1) states that a release may be included on the NPL if "[t]he release scores sufficiently high pursuant to the Hazard Ranking System as described in Appendix A to this part." As indicated in the HRS documentation record as proposed for the Quanta Resources site, the site score is 50.00, well above the HRS cutoff score of 28.50, and it remains so after consideration of the comments received regarding the proposed listing.

Imminent risks requiring immediate action may, in some cases, be addressed through removal actions. However, a comprehensive site response at an NPL site may include both removal and remedial response actions addressing both imminent and long term risk. Remedial actions, which are performed after listing, are defined in CERCLA Section 101(24) as "those actions consistent with permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment." The evaluation of the Quanta Resources site has advanced through several screening assessments, including the HRS, and EPA has determined that placing Quanta Resources on the NPL provides the best assurance for a comprehensive site response. EPA also notes that the HRS is intended to measure "relative" rather than absolute risk and consequently has been designed so that it may be consistently applied to a wide variety of sites based on limited data. It is beyond the scope of the HRS as a screening tool, however, to provide quantitative risk assessment evaluations.

Further, EPA has developed guidance to aid in prioritizing NPL candidate sites to identify those posing the greatest health and ecological risks.[10] In the case of Quanta Resources, a release to the Hudson River of multiple highly toxic hazardous substances known to bioaccumulate has already occurred and been documented. Surface and subsurface soils throughout the site contain separate phase heavy end coal tar contamination consisting of hard solid coal tar pitch, sticky coal tar roofing pitch, and viscous oil-like tar (see page 10 of and Reference 6 to the HRS documentation record at proposal, *Project Note to Quanta Resources File, Subject: Quanta Resources Meeting*). Analytical data collected from on-site soils document the presence of VOCs and metals contamination, as well as extensive contamination with PAHs, known constituents of coal tar that may be highly toxic. Several of these CERCLA hazardous substances are documented in the contaminated soil at the site at concentrations well above the health-

[9]The three methods for placing sites on the NPL are also described in the Federal Register proposing that Quanta Resources be added to the NPL (66 FR 2380-2385, January 11, 2001).

[10]Memorandum from Henry L. Longest II, Director, Office of Emergency and Remedial Response, to Director, Waste Management Division, Regions I, IV, V, VII; Director, Emergency and Remedial Response Division, Region II; Director, Hazardous Waste Management Division, Regions III, VI, VIII, IX; Director, Hazardous Waste Division, Region X; Director, Environmental Services Division, Regions, I, VI, VII. Subject: Guidance on Setting Priorities for NPL Candidate Sites. October 28, 1992; and Memorandum from Henry L. Longest II, Director, Office of Emergency and Remedial Response, to Regional Waste Management Directors; ESD Directors; Superfund Branch Chiefs. Subject: Additional Guidance on "Worst Sites" and "NPL Caliber Sites" to assist in SACM Implementation. August 26, 1993.

based benchmarks used to determine Level I actual contamination of human targets for the soil exposure pathway.[11]

The heavy end coal tar contamination documented throughout on-site soils is also present in the sediments of the Hudson River adjacent to the site (see pages 10, 26, and 27 of the HRS documentation record as proposed). An investigation conducted by Allied-Signal, Inc., estimated that this heavy end coal tar contamination extends approximately 750 feet into the Hudson River from the shoreline (see pages 10, 26, and 27 and Reference 6 of the HRS documentation record as proposed). These contaminated sediments are also documented to contain elevated levels of numerous CERCLA hazardous substances, some of which have been shown to bioaccumulate in the food chain (e.g., benzo(a)pyrene) (see page 31 of the HRS documentation record as proposed).[12] The Hudson River is a human food chain fishery; therefore, the potential exists for human exposure to these hazardous substances via the human food chain. Additionally, the Hudson River is designated by the State of New Jersey for protection under Section 305(a) of the Clean Water Act (see Reference 10 to the HRS documentation record as proposed, *Project Note to Quanta Resources File, Subject: Sensitive Environments - Quanta Resources Site*). Based on the relative risk to both human health and the environment posed by this site, Quanta Resources is appropriately considered an NPL site.

Regarding the statement that not all pathways were scored, EPA is not required to document an HRS score for every pathway, component, and threat. As noted on the cover sheet of the HRS documentation record as proposed, the ground water migration, soil exposure, and air migration pathways were not scored because the site score would not be significantly impacted. This does not imply that no risk is associated with these pathways, but rather that the site score achieved by the scoring of the surface water migration pathway alone was sufficiently high (greater than 28.50) to warrant listing on the NPL.

Regarding the quote from Richard Cahill, Honeywell appears to have quoted text from the newspaper article and mistakenly identified it as a direct quote of Mr. Cahill's. The actual statement made by Mr. Cahill as quoted by The Bergen Record is "[w]e're not looking at something that's imminent or immediate. . ."[13] Mr. Cahill did not state that there is no risk associated with the site. As identified above, there is a long-term risk associated with this site that will be addressed during remediation. The article also notes that "the chemicals [at the site] have been known to hurt plants and wildlife." This is consistent with the HRS score being based on the threat to human food chain organisms.

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[11]For example, the Cancer Risk Screening Concentration for benzo(a)pyrene and dibenz(a,h)anthracene is 0.088 mg/kg. These two hazardous substances were detected within two feet of the ground surface at 1,400 mg/kg and 190 mg/kg, respectively (see analytical results for sample 98313-03 on page 8 of Reference 6 of the HRS documentation record as proposed).

[12]Benzo(a)pyrene is assigned a freshwater bioaccumulation value of 50,000 (in a range from 0.5 to 50,000) in the Superfund Chemical Data Matrix based on fish tissue bioaccumulation studies. The higher bioaccumulation potential factor value between freshwater and saltwater is assigned when the subject fishery is in a brackish water body (see Section 4.1.3.2.1.3, *Bioaccumulation potential*, of the HRS). The Hudson River is considered brackish in the vicinity of the site for HRS purposes.

[13]Fasbach, Laura. "Edgewater Site in Line for Cleanup Funds, U.S. Plans to Assign Superfund Status." The Bergen Record January 12, 2001.

1.2.3.4 Cleanup Alternatives/Deferral to Brownfields

In describing the effects of an NPL listing on the redevelopment and rejuvenation efforts in the vicinity of the site, QEWG referred to the site as a "brownfield area." QEWG suggested that removal actions would suffice and that EPA immediately implement the recommendations in the draft Engineering Evaluation/Cost Analysis (EE/CA) for addressing the sheen on the river, in lieu of an NPL listing. QEWG stated that, at the time the comment was written, no action had been taken to implement the recommendations made in the draft EE/CA, such as constructing an interceptor trench or pumping upgradient wells. In support of using only removal alternatives, QEWG stated that dredging the Hudson River, one of the alternatives discussed in the draft EE/CA, would have serious financial and ecological repercussions.

Mr. Heagney referred to Quanta Resources as a "brownfield site" and stated that Edgewater is designated by the State of New Jersey as an economically depressed community eligible for assistance to implement neighborhood-based programs. In a section of his letter titled "Brownfield Redevelopment Proposal for Site," Mr. Heagney described his cleanup and redevelopment plans for the Quanta Resources property and stated that these plans satisfy State of New Jersey requirements for the remediation of brownfield sites and that they will "address the principal risk posed by the Site." Additionally, Mr. Heagney suggested that the upland contamination would be most appropriately addressed through non-time critical (NTC) removals using presumptive remedies consistent with the Superfund Accelerated Cleanup Model

(SACM). He included a description of cleanup activities addressing non-aqueous phase liquid (NAPL) contamination at four other sites.[14]

The Estate pointed out that Mr. Heagney has proposed a cleanup plan for the Quanta Resources facility property. However, the Estate claimed that Honeywell is responsible for the contamination present at the site and suggested that the appropriate solution is for EPA to issue a directive to Honeywell to remediate the entire site within a specified time limit.

Honeywell contended that any contamination in the sediments of the river should be left to natural attenuation, or, if EPA perceives an ecological risk, Honeywell suggested performing a risk assessment by amending the existing removal order. Honeywell also alleged that EPA's policy on listing sites is that "the NPL is a choice of last resort" and that sites will not be listed if they can be addressed by any other means. Honeywell based this allegation on a statement in EPA's Detailed Comments on the draft *Superfund: Times to Complete the Assessment and Cleanup of Hazardous Waste Sites*, GAO (March 1997). Honeywell interpreted this statement to mean that "EPA will no longer list sites on the NPL if they can be addressed in other ways, such as through removal actions, the RCRA corrective action program, state cleanup programs, or voluntary cleanups by PRPs." Honeywell also noted that EPA has already identified several possible removal actions for addressing contamination at the Quanta Resources site.

In response, the issues raised by commenters in no way negate any of the findings as documented in the HRS documentation record as proposed nor EPA's decision to pursue an NPL listing for this site. Response actions must be protective of human health and the environment and meet State and Federal

[14]Mr. Heagney briefly described the activities at the Bangor Gas Works site in Bangor, ME; the Pine Street Canal site in Burlington, VT; the Dover Gas Light Co. site in Dover, DE; and the Allied Chemical Ironton site (in CERCLIS as Allied Chemical & Ironton Coke) in Ironton, OH.

applicable requirements. Placing sites on the NPL is often the best assurance for a comprehensive site response. Although NTC removal actions may be implemented as part of a comprehensive site response, NTC removal actions alone may not adequately address the contamination at the site, which includes the contamination present in Hudson River sediments (see section 1.2.3.3 of this document). The conclusions in the draft EE/CA being developed by Honeywell have not been approved by the Agency as adequately addressing the concerns at the site and/or being protective of human health and the environment. Once the report is completed and finalized, EPA will fully consider the effectiveness, cost, and feasibility of possible response actions, such as dredging of sediments, before deciding what, if any, further response actions are appropriate. Further, an NPL listing identifies priorities for Federal remediation funds and in no way prevents PRP-financed response actions or actions funded by a private party, such as Mr. Heagney, if the response actions adequately address the subject contamination. It is important to note that Mr. Heagney's proposal only addresses the 5.3-acre portion of the site property for which Mr. Heagney entered into an Agreement of Sale and Purchase. As stated in the Site Summary of the HRS documentation record as proposed, Quanta Resources covers approximately 8 acres.[15] Therefore, Mr. Heagney's proposal does not address the entire site.

Regarding the suggestion that the site be addressed under a brownfields program, it is not clear if the commenters are referring to a State or Federal program. The Quanta Resources site is not currently involved in any State of New Jersey or Federal brownfields program. It is EPA policy to coordinate with the State in which a site is located throughout the Superfund process. The first criterion in determining a site's eligibility for deferral to a State program is that the State express interest in having the site deferred to it.[16] Not only has the State of New Jersey not expressed interest in a deferral of Quanta Resources to a State program, the State recommended that Quanta Resources be included on the NPL.

Regarding the Estate's suggestion that EPA issue a directive to Honeywell to remediate the site, an NPL listing does not preclude the issuance of an order, if determined to be appropriate. Furthermore, the issuance of an order is not relevant to the HRS scoring of this site.

Regarding Honeywell's suggestion that the contaminated sediments be left to natural attenuation or that a risk assessment be performed, natural attenuation may be an option considered during selection of response actions. However, the performance of a risk assessment and the selection of response actions occur during a different stage in the Superfund process (during the development of a ROD) and do not affect the listing decision. Regarding the quote from the GAO report presented by Honeywell, the complete statement from which Honeywell took its quotation is "EPA currently views the NPL as a choice of last resort, when other cleanup options are not practicable or available."[17] This statement is part of a

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[15]As explained in the preamble to the rule proposing this site (66 FR 2380, January 11, 2001), the exact boundaries of a site are not determined at the listing stage of the Superfund process. A site includes all areas where any site-related contamination has come to be located. For example, the Quanta Resources site is not limited to only the extent of the coal tar contamination. The extent of the site is usually defined once the RI for the site has been completed.

[16]See page 4 of "Guidance on Deferral of NPL Listing Determinations while States Oversee Response Actions" (PB95-963223) issued by EPA in May 1995.

[17]See page 3 of Appendix V, "Comments from the Environmental Protection Agency," to the March 1997 GAO report *Superfund: Times to Complete the Assessment and Cleanup of Hazardous Waste Sites*. (Located on the GAO Internet homepage by searching 'GAO Reports' at http://www.gao.gov/).

broader discussion of the site assessment program and does not represent a statement of EPA policy. A comprehensive response at an NPL site may include a combination of the cleanup actions as specified by Honeywell in its comments. However, the NCP at 40 CFR 300.425(b)(1) (55 FR 8845, March 8, 1990) limits the use of the CERCLA Trust Fund to remedial actions at sites on the NPL. Therefore, listing on the NPL expands the response options available to EPA.

1.2.3.5 Liability

The Estate claimed that Allied-Signal did not advise the Estate of the presence of hazardous substance contamination prior to the Estate acquiring the property in March 1974. Therefore, the Estate contended that it is an innocent purchaser of the property. The Estate stated that it has performed "substantial cleanup activities" and cooperated and assisted with cleanup activities by Allied-Signal and EPA. The Estate further alleged that Allied-Signal's operations resulted in the contamination and, therefore, Allied-Signal is responsible for remediation.

In response, the Agency neither confirms nor denies the accuracy of the commenters' statements as to who is responsible for the contamination at and release from this site. Liability is not considered in evaluating a site under the HRS. The NPL serves primarily as an informational tool for use by the Agency in identifying those sites that appear to present a significant risk to public health or the environment. It does not reflect a judgment on the activities of the owner(s) or operator(s) of a site. It does not require those persons to undertake any action, nor does it assign liability to any party or to the owner of any specific property. As noted in the Federal Register proposing that Quanta Resources be added to the NPL, ". . . if a party does not believe it is liable for releases on discrete parcels of property, supporting information can be submitted to the Agency at any time after a party receives notice it is a potentially responsible party."[18]

Further, if the properties in question are found to require remediation, the landowners may choose to resolve their liability through the application of the *de minimis* settlement provisions of Section 122(g)(B) of CERCLA. A person who acquires already contaminated property and who can satisfy the remaining requirements of Section 101(35) and Section 107(b)(3) may be able to establish a defense to liability. (Also see U.S. EPA, *Guidance on Landowner Liability under Section 107(a)(1) of CERCLA*, http://es.epa.gov/oeca/osre/890606.html. Last updated: February 18, 1998. Accessed: June 4, 2001).

1.2.3.6 Economic Impacts of Listing/Delay

All commenters contended that the listing of the Quanta Resources site will interfere with the redevelopment plans for not only the Quanta Resources property, but also for the adjacent properties. Honeywell and the Estate claimed that a stigma incurred due to an NPL listing will limit any possible future interest in the property. QEWG stated that the alleged interference with the redevelopment plans will have serious harmful consequences for the local community of Edgewater. Mr. Heagney specifically estimated that an NPL listing would delay redevelopment for between four to ten years and prevent local economic revitalization while sediment contamination is delineated.

[18] 66 FR 2380-2385, January 11, 2001.

Mr. Heagney and the Estate commented that an NPL listing will negatively affect the value of the Quanta Resources property and adjacent properties. Mr. Heagney and the Estate contended that the value of the Quanta Resources property and adjacent properties will be diminished by a delay in remediation resulting from an NPL listing.

All commenters contended that an NPL listing will unnecessarily delay any cleanup actions to address the contamination at the site. QEWG purported that an NPL listing is environmentally unsound due to the delay that a subsequent lengthy remedial investigation will cause in addressing the threat at the site with immediately available removal options. The Estate also stated that additional remedial investigations indicated by an NPL listing will delay the ultimate remediation of the site. Honeywell and Mr. Heagney stated that an NPL listing is counterproductive to the cleanup of the upland area of the site, contrary to previous EPA activities at the site and to the principles of SACM.

In response, economic factors such as those raised by the commenter are generally not considered in the assessment of whether a site belongs on the NPL. Stigma associated with environmental contamination may be unavoidable, but any such stigma should not be blamed on the process of NPL listing. Inclusion of a site or facility on the list does not in itself reflect a judgment on the activities of the owner(s) or operator(s), but rather reflects the Agency's judgment that a significant release or threat of release has occurred and that the site is a priority for further investigation under CERCLA. The Agency notes that there are both costs and benefits that can be associated with listing a site. Among the benefits associated with listing a site on the NPL are increased health and environmental protection as a result of increased public awareness of potential hazards. In addition to the potential for Federally financed remedial actions, the addition of a site to the NPL could accelerate privately financed, voluntary cleanup efforts. Listing sites as national priority targets also may give States increased support for funding responses at particular sites. As a result of the additional CERCLA remedies, there will be lower human exposure to high-risk chemicals, and higher-quality surface water, ground water, soil, and air. Therefore, it is possible that any perceived or actual negative fluctuations in property values or development opportunities that may result from contamination may also be countered by positive fluctuations when a CERCLA investigation and any necessary cleanup are completed.

Regarding the comment that an NPL listing will delay remediation of the site, including a site on the NPL does not necessarily cause EPA to undertake remedial action, or indicate that any action is required by a private party; nor does an NPL listing prevent any private party, EPA, or other publicly funded removal or remedial actions planned for the site. Once a site is listed on the NPL, further investigations are performed to ensure that appropriate response actions are selected. Therefore, an NPL listing may facilitate achieving a comprehensive cleanup that is protective of human health and the environment. EPA will work to ensure that cleanup is prompt and cost-effective.

1.2.3.7 Basis for Listing

Mr. Heagney commented that the only basis for listing Quanta Resources is the "prevention of ongoing coal tar discharges to the Hudson [River]."

QEWG commented that the basis for the proposed NPL listing, as it appears to QEWG from the HRS documentation record as proposed, is only the sheen on the river. QEWG further contended that basing the proposed listing on the sheen in the river is misleading and that EPA's true rationale for listing the

Quanta Resources site is contamination in the sediments of the Hudson River. QEWG partially based this contention on the inclusion of the dredging of Hudson River sediments as a possible response action in the draft EE/CA report being "at EPA's request." QEWG stated that the dredging of sediments is the only remedial response action and the only action that could be considered eligible for Superfund monies if the site were listed. Therefore, QEWG concluded that EPA is pursuing an NPL listing solely to provide a means for the costs of dredging the Hudson River.

Further, QEWG stated that the contamination in the sediments was not scored under the HRS nor disclosed in the proposed listing. Therefore, QEWG alleged that the listing, as proposed, is disingenuous and violates the APA and the principles of Due Process set forth in the Fifth Amendment by not affording the public notice or an opportunity to comment on this "unrevealed rationale."

In response, the basis for listing the Quanta Resources site is that the HRS site score is 50.00, well above the HRS cutoff score of 28.50, and it remains so after consideration of the comments received regarding the proposed listing. The HRS is a screening tool used to identify sites that pose a sufficient threat to human health and the environment to warrant listing on the NPL (see 40 CFR 300.425(c)(1)). As such, the HRS documentation package serves only to document the findings of the HRS evaluation and the HRS site score. The HRS documentation package is not intended as a comprehensive risk assessment and does not define the entire extent of the site.

QEWG noted that EPA requested that dredging of sediments be included in the draft EE/CA. However, EPA's exploration of response options is unrelated to the HRS site score. The HRS documentation package does not necessarily include an evaluation of every possible concern at a site nor does it make any suggestion as to response actions to be taken at a site. The selection of removal and/or remedial response actions, if any, at a site is made after further investigations performed at subsequent steps in the Superfund process.

Regarding Mr. Heagney's comment that the only basis for listing is the prevention of coal tar releases to the Hudson River, the discharge of heavy end coal tar contamination is included in the HRS documentation record as proposed as part of the Source 1 characterization and is a concern at this site (see pages 10 through 17 of the HRS documentation record as proposed). However, it is incorrect to assume that "ongoing coal tar discharges" are the *only* basis for concern at this site. Similarly, the presence of a sheen emanating from the Hudson River mud flats adjacent to the Quanta Resources property, raised by QEWG, is noted and documented in the HRS documentation record as proposed (see page 26 of the HRS documentation record as proposed). However, nowhere in the HRS documentation record as proposed does EPA state or even imply that this sheen is the *only* basis for concern at the site.

QEWG's allegation that the contamination in the sediments was not scored under the HRS nor disclosed in the proposed listing is incorrect. The contamination in the sediments of the Hudson River is an integral part of the site score documented in the HRS documentation record as proposed and is clearly evident in the supporting references. As indicated below, the presence of heavy end coal tar contamination in the Hudson River sediments is scored in the HRS documentation record as proposed as part of the Source 1 characterization, the observed release by direct observation, waste characteristics, and the actual contamination of targets.

In the characterization of Source 1, Sample 98317-06 (Sed-4A), which was collected from Hudson River sediments, is described as having a "black, oily, visible product present" and a "strong coal tar odor" (see page 11 of the HRS documentation record as proposed). Although not the only hazardous substances

detected in the sample, benz(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, and dibenz(a,h)anthracene are associated with Source 1 based, in part, on this sediment sample collected from the Hudson River.

The likelihood of release factor category value is based on an observed release by direct observation. The discussion and documentation of the observed release by direct observation clearly includes the contamination in the sediments of the Hudson River. Page 27 of the HRS documentation record as proposed states that cone penetrometer test/Rapid Optical Screening Tool (CPT/ROST) tests were conducted to determine the ". . . lateral extent of heavy end product both on the Quanta Resources property and *within the Hudson River*" (emphasis added) and further states that the results of these tests estimated that the heavy end coal tar contamination extends ". . . approximately 750 feet *into the Hudson River*" (emphasis added). The discussion of the observed release by direct observation in the HRS documentation record as proposed also states that "[t]he product present *in Hudson River sediments* consisted of lenses of oil-like product and roofing pitch *within the river silt*" (emphasis added) and notes that ". . . sheens were observed emanating from *the Hudson River mud flats*" (emphasis added). It is further noted in the HRS documentation record as proposed that cross sections generated by the CPT/ROST tests indicate that ". . . the heavy end coal tar product is continuous on the Quanta Resources property below the soil and *into the Hudson River*" (emphasis added).

Page 28 of the HRS documentation record as proposed presents three sediment samples, Sed-4A, SED-5, and SED-8, which were ". . . collected from [the] Hudson River adjacent to the Quanta Resources property where oily sheens were observed." Although not the only hazardous substances detected in these samples, these three sediment samples document the presence of benz(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, and dibenz(a,h)anthracene in the observed release by direct observation to the Hudson River. Based on the documentation of the presence of heavy end coal tar contamination containing hazardous substances in the Hudson River sediments, the likelihood of release factor category value is assigned a value of 550, the highest possible value for this factor category. Additionally, these sediment samples document the presence of hazardous substances with a bioaccumulation potential factor value of 500 or greater in the observed release by direct observation to a fishery in the Hudson River. Therefore, the human food chain targets are scored as subject to Level II concentrations; that is, concentrations of hazardous substances significantly above background levels but below health-based benchmarks as discussed in section 1.2.3.9 of this support document (see page 31 of the HRS documentation record as proposed).

Benzo(a)pyrene and dibenz(a,h)anthracene are scored for the toxicity/persistence/bioaccumulation factor value in the human food chain threat, and benzo(a)pyrene and benz(a)anthracene are scored for the ecosystem toxicity/persistence/bioaccumulation factor value in the environmental threat (see pages 29 and 39 of the HRS documentation record as proposed). The documented presence of these hazardous substances in sediment samples collected from the river supports the scores assigned to these factor values. These factor values are subsequently included in the determination of the waste characteristics factor category value for both threats.

The sediment contamination in the Hudson River is also documented throughout the references supporting the HRS documentation record as proposed. An aerial depiction of the lateral extent of heavy end coal tar contamination in Hudson River sediments is provided on page 2 of Reference 3, *Project Note to Quanta Resources File, Subject: Latitude and Longitude Calculations*, page 4 of Reference 6, *Project Note to Quanta Resources File, Subject: Quanta Resources Meeting*, page 4 of Reference 9, *Project Note to Quanta Resources File, Subject: Fisheries - Quanta Resources Site*, and page 3 of Reference 11, *Project*

Note to Quanta Resources File, Subject: Hazardous Waste Quantity. Pages 11, 12, and 14 of Reference 12, *Project Note to Quanta Resources File, Subject: Heavy End Coal Tar Product - Quanta Resources Site*, provide cross sections generated by CPT/ROST tests that depict the heavy end coal tar contamination in Hudson River sediments adjacent to the Quanta Resources property. Pages 11 and 12 of Reference 5, *Letter to Bob Montgomery, On-Scene Coordinator (OSC), EPA, Subject: Quanta Resources Site PRP Summary Report*, present descriptions of the presence of product, staining, and coal tar odors in sediment material collected from the Hudson River for chemical analysis in November 1998. Pages 47 through 73 of Reference 6 present the analytical results for these sediment samples, documenting the presence of hazardous substances in the Hudson River sediments. Reference 8, *Transmittal Memo to Bob Montgomery, OSC, EPA, Subject: Quanta Edgewater Site, Edgewater, Bergen County, New Jersey, Data Validation Assessment*, presents the analytical results for a sampling event in March 1998, also documenting the presence of hazardous substances in sediment samples collected from the Hudson River adjacent to the Quanta Resources property.

Further, the HRS documentation record as proposed and all supporting references have been available for public review from the Regional CERCLA Docket Office beginning January 11, 2001, and were subject to public comment until the close of the 60-day comment period on March 12, 2001. Therefore, the public has been afforded notice and a meaningful opportunity to comment on all aspects of this site, including the contamination in the Hudson River sediments, and all material in the listing docket.

1.2.3.8 Surface Water Pathway - Overland/Flood Component

QEWG commented that the HRS documentation record scores the "wrong pathway" and does not comply with the HRS. QEWG stated that the primary source of the sheen on the Hudson River is through subsurface migration, yet no scoring is presented for the ground water to surface water component.

QEWG quoted the draft EE/CA stating that the presence of subsurface flowable NAPL is documented in test pits and wells. The conclusion is made that the subsurface flowable NAPL is migrating to the river. QEWG stated that EPA has previously not disputed that "discharge from the subsurface fill to the river was the pathway of concern." QEWG contended that scoring the overland/flood component, and not the ground water to surface water component, is incongruous with EPA's previous position.

QEWG further contended that the HRS documentation record as proposed identifies only underground conduits for Source 1 and does not establish any migration route at all for Source 2. QEWG alleged that there is no overland migration path for the sources evaluated in the HRS documentation record as proposed and, therefore, EPA's scoring of the overland/flood component is inappropriate, arbitrary, and capricious. QEWG contended that the ground water to surface water component should have been scored instead.

In response, EPA's scoring of the overland/flood component of the surface water migration pathway is appropriate and fully consistent with the HRS. Section 4.0.1 of the HRS, *Migration components*, states that both the overland/flood and ground water to surface water components may be scored and that, if both are scored, the higher of the two component scores is assigned as the surface water pathway score. The assigned score for the overland/flood component, 100.00, is the maximum score possible for the surface water pathway; therefore, even if the ground water to surface water component were scored, the overall site score would be unaffected. The HRS does not require scoring all pathways, if scoring those pathways does not affect the listing decision.

The subsurface migration of contamination to the Hudson River is a migration route of concern at this site; however, it is not necessarily the only mechanism of migration. There are multiple possible migration routes of concern, which may include (but are not limited to) migration via ground water, migration via underground pipes and conduits, and migration via overland flow. Conditions and hazards at the site, such as the subsurface migration of contamination, will be more comprehensively characterized in other stages of the Superfund process. The HRS documentation record as proposed evaluates the threat(s) posed by the overland migration of hazardous substances, and therefore scored the overland/flood component of the surface water migration pathway in accordance with Section 4.1 of the HRS, *Overland/flood migration component*, as explained below.

Hazardous substances and hazardous waste quantities associated with a source are considered available to a pathway if they are assigned a containment factor value of greater than zero for that pathway (see HRS Section 2.2.3, *Identify hazardous substances available to a pathway*, and HRS Section 2.4.2, *Hazardous waste quantity*). There are no containment structures, as specified in Table 4-2 of the HRS, *Containment Factor Values for Surface Water Migration Pathway*, associated with either Source 1 or Source 2 to prevent a release from this source to the surface water migration pathway via the overland/flood migration component. Therefore, they are both assigned a containment factor value of 10, the maximum possible value for this factor (see pages 10 and 18 of the HRS documentation record as proposed). A possible migration path for Source 1, heavy end product discharge, may be through the buried pipes and conduits to directly discharge to the Hudson River. Migration through buried pipes and conduits can hardly be considered migration via ground water. The heavy end product discharge evaluated as Source 1 is present both on land and in the sediments of the Hudson River. The PPE(s) for Source 1 is/are the point(s) at which the coal tar discharge is in direct contact with the water and/or sediments of the Hudson River. A possible migration path for Source 2, contaminated soil, may be by sheet flow to the river. Page 1 of Reference 13, *Telecon Note with Ilene Presworsky, Environmental Scientist, Excel Environmental, Subject: Quanta Resources*, states that ". . .runoff from the property [is] toward the east toward the river." The PPE(s) for Source 2 is/are the point(s) at which runoff from Source 2 enters the Hudson River.

1.2.3.9 HRS Fishery

QEWG commented that actual contamination of an HRS fishery is not adequately documented. QEWG quoted the HRS and stated that a fishery has not been documented within the boundaries of the observed release. QEWG pointed out that the only evidence of a fishery within the boundaries of the observed release is the observation of people fishing from an upstream pier and a statement that a gillnetter fishes the general area for shad. QEWG also noted that these statements were made in telecons, which QEWG contended constitute "double hearsay."

QEWG also contended that EPA has not demonstrated human consumption of any fish caught in this area. QEWG stated that the area is heavily industrialized and there is no evidence that fishing in the area is for anything other than sport.[19]

QEWG concluded that, without actual contamination of an HRS fishery, the site score drops below 28.50. QEWG concluded that the presence of a fishery and, therefore, the entire basis for the HRS site score and NPL listing, is unsubstantiated.

[19]The area around Quanta Resources is more appropriately characterized as commercial and residential.

In response, EPA correctly evaluated the actual contamination of a fishery at Quanta Resources according to the HRS. As QEWG noted, Section 4.1.3.3 of the HRS, *Human food chain threat - targets*, directs the user to:

> [c]onsider a fishery (or portion of a fishery) within the target distance limit of the watershed to be subject to actual human food chain contamination if any of the following apply:
>
> - A hazardous substance having a bioaccumulation potential factor value of 500 or greater is present either in an observed release by direct observation to the watershed or in a surface water or sediment sample from the watershed at a level that meets the criteria for an observed release to the watershed from the site, and at least a portion of the fishery is within the boundaries of the observed release (that is, it is located either at the point of direct observation or at or between the probable point of entry and the most distant sampling point establishing the observed release).

According to Reference 9 to the HRS documentation record as proposed, *Project Note to Quanta Resources File, Subject: Fisheries - Quanta Resources Site*, the presence of a fishery for HRS purposes in the Hudson River is documented based on:

- a Phone Conversation Record of a conversation between Mr. Dennis Foerter, a Weston employee involved with the preparation of the HRS documentation package, and Mr. Bill Andrews, a biologist for the NJDEP Bureau of Marine Fisheries. The Phone Conversation Record is signed by Mr. Foerter, the originator of the call. Mr. Andrews stated to Mr. Foerter that the area of the Hudson River adjacent to Quanta Resources is fished for striped bass, white perch, white catfish, blue crab, tomcod, American eel, and winter flounder. Mr. Andrews also indicated that "records indicate that there is a gillnetter which fishes this area for American shad."

- an Interview Log of a conversation between Mr. Foerter and Mr. Jorge Quinones, EPA Region II Superfund Technical Assessment and Response Team. The Interview Log is signed by Mr. Foerter, who participated in the conversation with Mr. Quinones. Mr. Quinones worked as a representative of EPA Region II at the site in June 1999 and observed people fishing off the pier immediately north of the site. Mr. Quinones marked the location of these fishermen on a map which also depicts the lateral extent of heavy end product contamination in the sediments of the Hudson River. This map is included as page 4 of Reference 9 to the HRS documentation record as proposed.

In summary, the presence of a fishery in the Hudson River adjacent to the site and, therefore, at the point of the observed release by direct observation, is established by statements by a NJDEP Bureau of Marine Fisheries biologist who knows the area and by the observation of people fishing the area. The observed release by direct observation documented the release of multiple hazardous substances with a bioaccumulation factor value of 500 or greater to the Hudson River adjacent to the site. Therefore, the fishery in the Hudson River is correctly evaluated as subject to Level II concentrations.

Regarding the comment that human consumption of any fish caught from this area has not been demonstrated, the HRS does not require that actual consumption of human food chain organisms be

demonstrated, nor does the HRS require that a detrimental effect on the human food chain organisms or correlation between the aquatic community and the contaminants in the watershed be established. In the development of the HRS, EPA did not limit the consideration of human food chain threats to only those situations where there is evidence that hazardous substances are being consumed. The data requirements needed to evaluate such evidence of hazardous substance consumption at every site would be too excessive and time consuming at the site screening (i.e., HRS) level of accuracy. The HRS is a screening model that uses limited resources to determine whether a site should be placed on the NPL for possible Superfund response. EPA must reconcile the need for certainty before action with the need for inexpensive, expeditious procedures to identify potentially hazardous sites. The courts have found EPA's approach to solving this conundrum to be "reasonable and fully in accord with Congressional intent." Eagle Picher Industries, Inc. v. EPA, (759 F.2d 905 (D.C. Cir. 1985) Eagle Picher I).

Regarding the comment that the Phone Conversation Record and Interview Log included in Reference 9 to the HRS documentation record as proposed are double hearsay, both documents were written and signed by a party present at, and who participated in, the subject conversations.

1.2.4 Conclusion

The original score for Quanta Resources was 50.00. Based on the above response to comments, the score remains unchanged. The final scores for the Quanta Resources site are:

Ground Water	Not Scored
Surface Water	100.00
Soil Exposure	Not Scored
Air Pathway	Not Scored
HRS Score	50.00

REGION 5

2.1 Ashland/Northern States Power Lakefront, Ashland, Wisconsin

2.1.1 List of Commenters/Correspondents

NPL-U34-5-4-R5	Correspondence dated May 31, 2000 from Governor Tommy G. Thompson of Wisconsin
NPL-U34-5-4-R5	Comment dated January 30, 2001 from Jerry C. Winslow, Principal Environmental Engineer, Xcel Energy
NPL-U34-3-4-L1-R5	Comment dated February 2, 2001 from Jerry C. Winslow, Principal Environmental Engineer, Xcel Energy

2.1.2 Site Description

The Ashland/Northern States Power Lakefront (Ashland NSP Lakefront) site is located in Ashland, Ashland County, Wisconsin, and encompasses Northern States Power Company (NSP) property (the location of a former manufactured gas plant (MGP) that operated from 1885-1947), Wisconsin Central Limited Railroad corridor, Kreher Park (formerly the location of the City of Ashland's waste water treatment plant), and Chequamegon Bay. Benzo(a)pyrene, benzo(a)anthracene, xylenes, ethylbenzene, and other volatile organic compounds (VOCs) from former MGP operations have contaminated soils and underlying ground water, and have migrated to Chequamegon Bay, a recreational area and a state endangered species habitat.

Source 1, the Former Ravine Area, was evaluated as a landfill. Prior to 1909, the ravine extended through the upper bluff area in the vicinity of the NSP facility. During the operation of the MGP, residual coal tars and oils were produced as a by-product from the manufacture of natural gas from coal. Records indicate that the residual MGP wastes such as coal tar and oils were discharged with the waste water. The ravine has been filled. On-site fill soils contaminated with coal tar have been found with free product dense non-aqueous phase liquids (DNAPLs) in the base of a former ravine that extends across the NSP facility, indicating that some of the coal tar was disposed on site. This ravine also contains cinders ash, boiler slag, and demolition debris. Just north of the ravine is a seep where water, oils and tar flow to the land surface. Historic drawings refer to a waste tar dump between the seep area and waste water treatment plant.

Source 2, the Ashland Lakefront/Kreher Park Area, was evaluated as a landfill. The lakefront portion of the site has been the location of industrial activities over the past 150 years and currently consists of a landfilled area in the city-owned Kreher Park (a series of sawmills operated in this area from the early 1880s through 1931). The City-owned parcels of the lakefront were created in the late 1800s to the early 1900s by the placement of fill materials into Chequamegon Bay. The fill material identified to date includes wood wastes, clay, silt, peat and sand.

In 1989, the City of Ashland conducted an investigation on the Kreher Park area for possible expansion of the existing wastewater treatment facility. The discovery of contamination from what was believed to be creosote wastes in the subsoils and ground water at Kreher Park prompted the City to abandon the project.

Subsequently, the Wisconsin Department of Natural Resources (WDNR) performed an assessment of the contamination in 1998. Soil borings and ground water samples indicated elevated levels of hazardous substances. Additionally, WDNR discovered that Chequamegon Bay sediments directly offshore of Kreher Park contain VOCs, polyaromatic hydrocarbons (PAHs), and DNAPL oils and tars. Disturbance of these sediments releases oils and tars to the water column and surface, causing a slick to form on the water surface. In 1995 and 1999, NSP conducted investigations that further defined the area of contamination and confirmed the presence of VOCs associated with coal tar wastes.

Chequamegon Bay is a recreational fishery and boating area, and there is a marina directly adjacent to the site. The Common Tern, a state endangered species, nests in the vicinity of Chequamegon Bay. In addition, the Ashland Water Utility, serving 9,115 people, has a water intake in the bay approximately 1,922 feet offshore of the Kreher Park area.

2.1.3 Summary of Comments/Correspondence

Governor Tommy G. Thompson of Wisconsin supported the placement of the Ashland NSP Lakefront site on the NPL.

Mr. Jerry C. Winslow of Xcel Energy (Xcel) submitted a letter dated January 30, 2001. In that letter, Xcel questioned the accuracy of information in the NPL Characteristics Data Collection Form. Specifically, Xcel questioned the site name, how the site was initially identified, the entity that generated waste, the depth to aquifer, and type of response action.

In addition, Xcel stated that several facts were misrepresented in the HRS documentation record. Xcel also questioned the integrity of Reference 22, *Annual Report of the Ashland Light, Power & Street Railway Co., for the years ending 1909 to 1915; 1917 to 1922; 1938, 1939, 1941, and 1944,* stating that this reference should include operating reports, and street and railcar commission reports. Xcel also questioned the pagination of Reference 22. Xcel noted that the annual reports available at the time the MGP was in operation are only several pages thick and many of the entries are blank, indicating operating information was not recorded and that the lack of data does not allow one to conclude what the actual operations at the facility encompassed. It also maintained that Reference 22 contained no records of the disposition of wastewater streams, or the separation of tar from those streams, and that it is erroneous to conclude that the lack of records indicating the disposition of the tar or tar sales records before 1939 is an indication that the tar was not recovered for sale or other purposes.

Xcel stated that a forensic analysis had been performed on the two-inch pipe in the same location as indicated by the historic drawings with the caption “2" to abandon tar dump.” It contended that the forensic examination of the pipe concluded that it did not contain hydrocarbon residues, indicating that it was not used to transport tar. Xcel stated that the contamination at this site was first encountered in 1989, not 1980. Xcel commented on the source characterization for Source 1. It noted that the HRS documentation references contained contradictory information concerning the time period during which the production of gas by coal carbonization and carburetted water gas processes occurred. Xcel took exception to the statement in the documentation record at proposal, that no record exists on the waste disposal methods, saying this is not entirely true.

Xcel noted that according to Sanborn Fire Insurance maps, the ravine was filled by 1909, not 1923. Xcel also commented on the thickness of free product DNAPL in wells MW-9, MW-15, TW-13, MW-13A, and

MW-13B, located in the former ravine area. Xcel requested that the statement that eyewitness accounts indicated that open tar creosote pits ***may have been located*** south of the waste water treatment plant be revised to state that eyewitness accounts indicate that creosote pits ***were located*** there to reflect that the witnesses were emphatic in their accounts (emphasis added by Xcel). Xcel objected to the statement that the seep at the mouth of the former ravine is located where the ravine originally discharged to Chequamegon Bay before the filling of the ravine and the lakefront.

Xcel noted that other potential sources in the area might be responsible for contamination in the bay. Xcel conducted a fingerprinting (analytical data that seek to establish an association between the site and a unique form of a substance or unique ratios of different substances) study that concluded that the tarry materials in the bay were dissimilar to materials found at Xcel's former MGP site. Xcel disputed that the sediment contamination in Chequamegon Bay is attributed to the coal tar from the MGP that operated on the NSP property.

2.1.3.1 Incorrect Information in the NPL Characteristics Data Collection Form

Xcel questioned information in the NPL Characteristics Data Collection Form. Specifically, it questioned the site name, which it stated should be, according to the Wisconsin Department of Natural Resources (WDNR), "The Ashland/Northern States Power Lakefront Site." (Xcel did not indicate what the site name on its copy of the NPL Characteristics Data Collection Form was.) It contested how the site was initially identified, indicating that it was by citizen complaint, not through a State/local program. Xcel acknowledged that wood/lumber treatment is identified as a source under recycling activity (Section 4.2 of the NPL Characteristics Data Collection Form, *Entity that Generated the Waste),* but stated that it would seem more appropriate to check the box "Wood preserving/treatment" under the manufacturing category of this section. It commented on the depth to aquifer, stating that it should be listed as between 10 and 25 feet, not less than 10 feet, to water usable for drinking water or other beneficial uses. Finally, it noted that for Section 8.1, *Type of Response Action*, none was checked. Xcel contested this because in 2000, it installed a coal tar/DNAPL removal system on its property for product removal and aquifer improvement.

In response, the NPL Characteristics Data Collection Form is not used in any aspect of HRS scoring and is intended to be purely informational in purpose. The NPL Characteristics Data Collection Form was designed to standardize the site information collected for input into the Superfund NPL Assessment Program (SNAP) data base. This data base is a repository for general information about NPL sites and is used to respond to public queries about NPL sites. The information needed to complete the form comes from Regional site file documents (e.g., Preliminary Assessments and Site Inspection reports), along with the site's HRS scoring package. The NPL Characteristics Data Collection Form, General Instruction sheet states "[i]f definitive data are not available in the site file to answer a question, estimates based on best professional judgment and other sources of information are acceptable." The NPL Characteristics Data Collection Form was completed appropriately based on available information. However, EPA has changed the NPL Characteristics Data Collection Form and the corresponding data base to reflect the commenter's suggestions. However, regarding the site name, the correct site name (as indicated by the commenter) appears on EPA's copy of the NPL Characteristics Data Collection Form (the final version and the version used in the NPL Characterization Data Base). Regardless, these comments have no bearing on the site score.

2.1.3.2 Integrity of Reference 22

Xcel commented on the integrity of Reference 22, *Annual Report of the Ashland Light, Power & Street Railway Co., for the years ending 1909 to 1915; 1917 to 1922; 1938, 1939, 1941, and 1944.* Xcel questioned this reference, indicating, "[o]perating information from the MGP was provided to the WDNR in the forms of copies of ledger entries for gas production and tar production data (when available) for the specific years mentioned in this reference. Annual reports for the MGP during these years did not contain this information except for two years (1932 and 1933) not cited for this reference. It is also noted that this reference should also include Brown's directories, other operating reports, and street and railcar commission reports."

Xcel commented on the source of the statement, "[f]acility records, where available, indicate that coal tar was not segregated for recovery from the wastewater or other streams until 1939. From 1939 to 1947, some tar was collected for sale (Ref. 5, page 1; Ref. 22, pages 1. . .127). . . ." Xcel claimed that there are records of tar sales for the years 1939, 1941, and 1944, but no others; however, there are no records of the disposition of wastewater streams, or the separation of tar from those streams. It commented that it is "erroneous" to conclude that the lack of tar sales records before 1939 is an indication that the tar was not recovered for sale or other purposes prior to that date. It suggested that the correct conclusion would be that no records are available. Xcel stated that this "again causes Xcel to question ref. 22." It noted that the annual reports available from the time the MGP was in operation are only several pages thick. Xcel questioned the specific page numbering of these reports. It noted once again that many of the ledger entries were blank, indicating this information was not recorded. Xcel concluded that this lack of data "cannot lead one to conclude what the actual operations encompassed."

Xcel also took exception to the statement, "[r]ecords indicate that the residual MGP wastes were not collected from the plant start-up (1880's) through 1938 (Ref. 22, pages 1. . .127)." It again noted that no information on plant operations is available from the Railroad Commission with the level of detail implied in this statement.

In response, these comments have no bearing on the site score. The information that Xcel has challenged was included in the HRS documentation record to give the reader a better understanding of the processes that occurred at this site. The HRS documentation record indicates that much of the information on the facility operation and history was not available. EPA has removed from the HRS documentation record the conclusions that the commenter suggested were drawn from incomplete documentation. Regardless, none of the information commented on was used to obtain HRS factor values used in the actual HRS scoring of the site. This has no effect on the site score.

2.1.3.3 Listing Information Incomplete or Incorrect

Xcel indicated that several facts were misrepresented in the HRS documentation record.

2.1.3.3.1 Discovery of Contamination

Xcel stated that the City of Ashland first encountered contamination at the lakefront when it investigated the area for possible expansion of the then-operating publically owned treatment works (POTW) in 1989, not 1980, as indicated on page 10 of the HRS documentation record at proposal.

In response, the date the contamination was encountered was based on Reference 5, *1995 Site Investigation Report;* it would appear that the City of Ashland did first encounter the contamination in 1989. EPA has revised the HRS documentation record to reflect that the City of Ashland first encountered the contamination in 1989. However, this information was not used to assign HRS factor values; the date of discovery of contamination is not a factor in a HRS evaluation. This comment has no impact on the site score.

2.1.3.3.2 Discussion of Pipe

Xcel noted the discussion of a pipe on an historic drawing with the caption "2" to abandon tar dump" in the site overview and several other sections of the HRS documentation record. Xcel discovered a pipe in that location and submitted it to Crane Engineering and Forensic Services (Crane) to determine if hydrocarbon residues were present, and the composition and age of the pipe. Crane's forensic examination of that pipe concluded:

> this pipe section is a common grade of welded steel pipe. The pipe was furnace butt welded. The pipe was probably used to transport water, steam or compressed air at low pressure. There is no evidence that the pipe ever transported hydrocarbons. It is highly unlikely that this pipe was manufactured prior to 1920.

In response, it is not clear that the forensic tests were performed on the same pipe as the one labeled in the diagram. As discussed later in this support document, Several conduits and pipes have been located in the seep area, and it is possible that the forensic tests were performed on the wrong pipe (see page 2 of SEH report dated November 1, 2001, Docket Number SFUND-2000-004-0044 and the discussion below of pipes in the seep area, section 2.1.3.4 of this support document, *Other Potential Sources/Attribution*). EPA notes that information besides the drawings indicate the possible presence of a pipe from the facility to an abandoned tar dump. In an interview, a resident of Ashland indicated that there was a pipe from the gas plant to the railroad tracks, in a ravine that was north of the gas plant. The resident stated that this pipe carried coal tar (HRS Reference 23, *Interview with Gordon Parent*). Regardless, no HRS factor value was dependent solely on the presence of the pipe in question. Even if EPA removed any reference to the two-inch pipe from the HRS documentation record, the site score would not change.

2.1.3.3.3 Source Characterization

Xcel noted contradictory information in references for the statement indicating that the plant produced gas by coal carbonization until approximately 1920, when it converted to a carburetted water gas process. It commented that this is noted in Reference 5, pages ES-1 and 1 (Dames & Moore Report) but that

subsequent Dames & Moore documents (e.g. Reference 17, *Remedial Action Options Feasibility Study - Final Report for the Ashland Lakefront Site*, prepared for Northern States Power) indicated that the plant had always produced water gas; coal gas production was reported for only one portion of one year (1917). Xcel stated that this is consistent with the forensic research on samples of tar from the Xcel site, which indicated a water gas source.

Xcel questioned the statement that no record exists on the waste disposal methods used by the facility. Xcel commented that this statement is not entirely true, and it ignores the fact that tars were considered a valuable by-product of gas manufacture rather than being a waste. It noted that records indicate that some of the tars were sold to third parties and some of the tars were burned for energy recovery.

Xcel stated that, according to Sanborn Fire Insurance maps, the ravine was filled by 1909, not 1923, as the source characterization section for Source 1 indicates.

Xcel also commented that the source characterization section for Source 1 in the HRS documentation record indicated that free product DNAPL thickness in wells MW-9, MW-15, TW-13, MW-13A, and MW-13B ranged "from inches to over 20 feet" (page 13 of the HRS documentation record at proposal). It noted that the 1999 Supplemental Investigation Report (HRS Reference 14) stated that free product DNAPL thickness within MW-13 [TW-13], MW-9 and MW-15, screened within the ravine fill, is approximately 2 feet thick, and that MW-13A and MW-13B, screened in the deep Copper Falls Aquifer and separated from the ravine fill by more than 15 feet of the Miller Creek Aquitard, yielded a free product DNAPL thickness of more than 20 feet.

In response, none of these comments has any bearing on the site score. None of the contradictory information was used to assign HRS factor values. However, set out below is a response to each alleged error raised by Xcel.

Regarding the years that the MGP produced gas by coal carbonization, EPA has found conflicting information. Reference 5, page 1, states that the MGP began the manufacture of coal gas in the late 1800s and switched to water gas production in the 1920s. Reference 17, page 2-5 states that the MGP operated as a manufacturer of water gas or associated derivatives from about 1885 to 1947. As stated previously, the years of production and the method of production do not affect the site score. Furthermore, Xcel does not deny that coal gas production ever occurred at the site; Xcel only has concerns about the years that coal gas production occurred at the site. The forensic research referred to by Xcel will be discussed below in section 2.1.3.4 of this support document, *Other Potential Sources/ Attribution.*

Regarding the comment about the record of waste disposal methods used by the facility, the proposed HRS documentation record indicates that some tar was collected for sale. Page 12 of the proposed HRS documentation record stated that information was not available on the disposition of residual coal tar that was not sold, and no records exist on the waste disposal methods used by the facility. Regardless, the availability of records of waste disposal methods used by the facility has no bearing on the site score; this information was provided to document the presence of coal tar at the site and purely for informational purposes.

Regarding the date the ravine was filled, Reference 12, *Sediment Investigation Report, Ashland Lakefront Property, Chequamegon Bay - Ashland, Wisconsin*, states that the historical Sanborn Fire Insurance Maps indicate that the ravine was filled sometime between 1886 and 1923. The ravine was filled in various stages over a number of years. The date of completion of filling is unknown. The actual date the ravine

was filled in has no bearing on the site score; this information was provided to document that the ravine was filled in and to give the reader an idea of the activities that had occurred at the site.

Regarding the DNAPL thickness in wells MW-9, TW-13, MW-15, MW-13A, and MW-13B, this information was not used in scoring the site. This information was intended only as supporting information to show that DNAPLs were present in this source. EPA recognizes that the commenter's statement is more detailed and also correct. Wells MW-9, TW-13, and MW-15 are screened in the backfilled ravine and yielded DNAPL thicknesses of no more than 2 feet, and wells MW-13A and MW-13B are screened in the Copper Falls Aquifer and yielded DNAPL thicknesses of greater than 20 feet. However, EPA has changed the HRS documentation record to reflect the more detailed description. The thickness of the DNAPL in the wells was not used in any HRS calculations or waste quantity estimate.

2.1.3.3.4 Tar Pit Location

Xcel requested that the statement "[e]yewitness accounts indicate that open tar creosote pits may have been located south of the present waste water treatment plant. . . ." be "corrected" to note that the eyewitness accounts "emphatically state that the creosote pits were located. . . ."

In response, none of the references in the HRS package indicate that eyewitness accounts "emphatically state" that the creosote pits "were located" in this area. EPA considers the language currently used in the HRS documentation record sufficient. In any case, the pits' being definitely south of the plant would not affect the HRS score.

2.1.3.3.5 Surface Water Migration Pathway

Xcel objected to the statement, "[a] seep at the mouth of the former ravine is located where the ravine originally discharged to Chequamegon Bay before the filling in of the ravine and the Ashland Lakefront." It stated that this statement is incorrect because a hydrogeologic study of the site demonstrated that the seep in Kreher Park is at least three feet higher than the water table in the immediate vicinity of the seep. Xcel commented that this would indicate that the source of the seep is likely to be a cultural artifact, maybe a buried culvert.

In response, the precise location of the seep has no bearing on the site score. The presence of a seep in the HRS evaluation is used to support the presence of an overland flow route from the ravine to the Bay. Whether the seep discharges directly to the Bay or is a cultural artifact is not relevant. An overland flow path can still be identified as the runoff from the former ravine area flowing into the City of Ashland sewer, which discharges, in turn, into Chequamegon Bay as indicated on page 32 of the HRS documentation record at proposal. The source of the seep is not relevant to the identification of the overland flow path for the site. Furthermore as discussed later in this support document, an investigation of the source of the seep has led to the discovery of a 12-inch pipe, originating on the NSP property, which appears to be the source of the contaminated water (see section 2.1.3.4 of this support document, *Other Potential Sources/Attribution*).

2.1.3.4 Other Potential Sources/Attribution

Xcel noted that other potential sources in the area might be responsible for the contamination in the bay. Xcel commented that it had been engaged in many discussions with the WDNR about "a separate source of contamination at the Lakefront, besides the former MGP." It specifically identified wood treatment operations by the John Schroeder Lumber Company. Xcel noted that the NPL Characteristics Data Collection Form indicated this, and so should the Site Overview section of the HRS documentation record. It noted similarly that to be consistent with the NPL Characteristics Data Collection Form, the Site Overview section of the HRS documentation record should also acknowledge the municipal landfill as another source contributing to the contamination in the bay.

Xcel took strong exception to the statement in the Site Overview section that reads "[t]he landfilled area at the Ashland Lakefront/Kreher Park and the former ravine have been identified as sources contributing to the contamination in Chequamegon Bay." It stated that, to date, there has been no physical evidence linking the contamination in the ravine fill to the contamination in the bay. Furthermore, it contended that a "recent fingerprinting study performed by the Gas Technology Institute (GTI, formerly the Institute of Gas Technology) concluded that the tarry materials found in the [b]ay sediments are substantially dissimilar to the materials found at Xcel's former MGP site. GTI found, however, the [b]ay sediment samples are highly similar to the tarry materials found in Kreher Park, the site of the former lumber yard known for treating wood and the municipal landfill."

Xcel took exception to the statement "[c]ontamination in soil and groundwater in both the Ashland Lakefront/Kreher Park and the former ravine indicates that the former ravine may be a conduit for contamination onto the Ashland Lakefront/Kreher Park." It stated that the reference supporting this statement is Reference 5, a 1995 Dames & Moore report that indicates the ravine is a potential source of ground water contamination to Kreher Park, because dissolved product in ground water is the only contaminant source that can migrate from the ravine to Kreher Park. It also noted that a later investigation "shows that only low levels of contaminants were migrating through this groundwater pathway." Xcel commented that work performed by Dames & Moore and Short Elliott Hendrickson Inc. (SEH) subsequent to these 1995 documents identifies separate sources, including wood treatment operations and the City landfill. Xcel stated that GTI performed a forensic analysis on samples of coal tar/DNAPL collected from the Xcel property, which indicate a signature characteristic of carburetted water gas tar. Xcel had the seep area at Kreher Park sampled and these sediments showed a different signature, "not comparable to carburetted water gas tar." Xcel stated that this information is presented in a report by the GTI, titled *Comparative Analysis of NAPL Residues from the NSP Ashland Former MGP Site and the Ashland Lakefront Property (Kreher Park).* [21, 24, 25] Furthermore, Xcel disputed that the sediment contamination in Chequamegon Bay is attributed to the coal tar from the MGP that operated on the NSP property.

In response, EPA has appropriately included the two sources identified as part of the Ashland/Northern States Power Lakefront site. EPA is not required at the listing stage to identify every possible source contributing to a release at the time of listing. For HRS purposes of evaluating the surface water pathway, EPA need only document that the sources used in the scoring of the site meet the HRS requirements of a source, be in the same watershed as the release being evaluated, and have a containment value greater than zero for the surface water pathway (see HRS Sections 1.1 *Definitions*, 2.2.1 *Identify sources*, 2.2.2 *Identify hazardous substances associated with a source*, and 2.2.3 *Identify hazardous substances available to a pathway*). In addition, as stated in Section 2.3 of the HRS, *Likelihood of release*, the HRS requires that,

when an observed release to surface water has been identified, "some portion of the release be attributable to the site."

As discussed in the HRS documentation record at proposal, EPA considers that it has presented sufficient rationale to support its conclusion that some portion of the release is attributable to the site. This conclusion is based on the lack of adequate containment of the sources, the finding of many of the same hazardous substances in the Bay and in the two sources (see pages 13-18, 22-28, and 32-38 of the HRS documentation record at proposal), and the presence of contaminant transport routes from the two sources to the Bay. EPA also determined that ground water and source samples from Source 1 and Source 2 indicate that the contamination is present and is moving towards Chequamegon Bay (see pages 37 and 38 of the HRS documentation record at proposal).

EPA also notes that Xcel has not questioned that the two sources, the contamination in Kreher Park and contamination in the former ravine area, meet the criteria to be considered sources for HRS purposes. Xcel also did not question the identification of an observed release in the Bay. It has asserted only that there are other sources not included in the evaluation, possibly including waste from a lumber treating facility, and questioned EPA's conclusion that the contamination in the former ravine area has contributed to the contamination in the Bay. In fact, Xcel's own comments state ". . .low levels of contaminants were migrating through this [the ravine] groundwater pathway [to Kreher Park]."

That many of the same substances are in the two site sources and in the Bay is documented on pages 13-17, 22-28 and 32-38 of the HRS documentation record at proposal. Specifically Source 1, the Former Ravine Area, and the Bay sediments both contain: anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, ethylbenzene, fluoranthene, fluorene, naphthalene, phenanthrene, pyrene, 2-methyl naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and xylene. Source 2, the Ashland Lakefront/Kreher Park Area, and the Bay sediments both contain: acenaphthene, anthracene, benzo(a) anthracene, benzo(a)pyrene, chrysene, ethylbenzene, fluoranthene, fluorene, p-isopropyltoluene, isopropylbenzene, naphthalene, phenanthrene, pyrene, 2-methyl naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and xylene.

Regarding the presence of an overland flow route from the ravine to the Bay, as noted previously, Xcel raised issues regarding the location of a seep from the ravine and the possibility of the presence of a pipe that may have discharged coal tar. As discussed previously in this support document, neither of these two issues negate the presence of an overland flow route from the ravine to the Bay (see Section 2.1.3.3 of this support document, *Listing Information Incomplete or Incorrect*).

In support of its challenge that the Bay contamination did not come from the ravine area, Xcel performed two "fingerprinting" studies: *Comparative Analysis of Sediment Samples From the NSP Ashland Former MGP Site and the Ashland Lakefront Property (Kreher Park)* (not included with Xcel's comments to the CERCLA Docket but provided by EPA to the CERCLA Docket as Docket Number SFUND-2000-004-0040, and the *Addendum to the Report: Comparative Analysis of Sediment Samples From the NSP Ashland Former MGP Site and the Ashland Lakefront Property (Kreher Park)* (included with Xcel's comments to the CERCLA Docket, Docket Number NPL-U34-4-1-R5). Xcel claimed that these two studies conclude that based on (1) the relative internal ratios of contaminants (i.e., the fingerprints) in three ground water samples from wells in the ravine area and in the Kreher Park area, the contamination in the Kreher Park area did not come from the migration of ground water from the former ravine area (see "Results" section of the Main report) and (2) a comparison of the fingerprints of the contamination in two sediment samples to those in the well samples, the contamination in the Bay did not come from the

contamination in the ravine area (see "Results" section of the Addendum to the report). Xcel also performed an additional fingerprinting analysis as a result of the discovery of the 12-inch pipe in the seep area of Kreher Park, the *Second Addendum to the Report: Comparative Analysis of Sediment Samples From the NSP Ashland Former MGP Site and the Ashland Lakefront Property (Kreher Park)* (Xcel did not include this report in its comments to the CERCLA Docket, but EPA has added this report to the CERCLA Docket, Docket Number SFUND-0004-0042). Xcel concluded in this fingerprint report that the sample taken from the 12 inch clay pipe is highly similar to a fingerprint of the sample from the well in the Kreher Park area which is in turn similar to that found in the bay (see "Results" section of the Second Addendum to the report).

Regarding the fingerprinting of the sediments in the Chequamegon Bay and the ravine area, while EPA agrees that it is possible that some of the contamination in the Kreher park area may have come from other sources, including a lumber treating facility, the fingerprinting study does not demonstrate that part of the release did not come from the site. While investigating Xcel's comments on the origin of the contamination in the Kreher Park area (Source 2), EPA has obtained recent information indicating that at least some of the contamination in the Kreher Park area has been discharged via a 12 inch clay pipe.

Xcel has participated in efforts to determine the source of seep in the Kreher Park. Xcel had personnel present during investigations of the seep and Xcel performed some of the work related to these investigations (see page 2 of Short Elliott Hendrickson INC. (SEH) report dated August 20, 2001, *Regarding: Ashland NSP Lakefront Site Pipe Source Investigation and Sampling Report,* Docket Number SFUND-200-0004-0043, and SEH report on pipe excavations performed by Xcel, dated November 1, 2001, *Regarding: Ashland NSP Lakefront Site Xcel Property Pipe Excavation Observation and Sampling Report,* Docket Number SFUND-2000-0004-0044). In addition, Xcel performed a fingerprinting analysis of a sample taken from the 12-inch pipe. The results of this fingerprinting analysis are discussed below in this section of this support document. During these investigations, a culvert and several conduits and pipes, including a 12-inch clay pipe, have been located in the seep area. Two reports resulting from the investigation of a 12-inch clay pipe (SEH report dated August 20, 2001, *Regarding: Ashland NSP Lakefront Site Pipe Source Investigation and Sampling Report,* and SEH report dated November 1, 2001, *Regarding: Ashland NSP Lakefront Site Xcel Property Pipe Excavation Observation and Sampling Report*) have been added to the CERCLA Docket (Docket numbers SFUND-2000-0004-0043 and SFUND-2000-0004-0044).

Specifically, these investigations identified a 12-inch clay pipe with a steady flow of contaminated water, sheening, oily, and strong odor (hazardous substances were identified in the sample taken from the 12-inch clay pipe for fingerprinting analysis, see below discussion about fingerprinting) (see page 1 of the SEH report from August 20, 2001, Docket Number SFUND-2000-004-0043, and pages 2, and 6-8 of the Second Addendum to the report, Docket Number SFUND-0004-0042). Subsurface investigations in February 2001 identified the 12-inch diameter clay pipe ending on the south side of the seep in the Kreher Park area. "Contaminated water (sheening, oily, strong odor) was observed discharging through the pipe and into the seep area during this investigation" (see page 1 of the SEH report dated August 20, 2001). SEH, on behalf of WDNR, conducted a pipe source investigation and sampling activities July 24 - 26, 2001. They traced the pipe south (upgradient) from the seep across the Wisconsin Central Limited (railway) property, across the railroad, up the filled-in ravine towards the MGP, where resistance was met approximately 60 feet on NSP property in the area of the storage yard (see SEH report dated August 20, 2001, *Regarding: Ashland NSP Lakefront Site Pipe Source Investigation and Sampling Report,* Docket Number SFUND-2000-0004-0043).

In an effort to further delineate the location and orientation of the 12-inch clay pipe, a subsurface investigation was performed from September 17 through September 20, 2001. Contaminated water was observed flowing from both sides of the 12-inch pipe into the excavation trenches. The pipe was traced across Xcel's property (from the storage yard area) through the east gate before making a turn to the south and extending perpendicular to St. Claire Street toward the Xcel Energy property located on the south side of St. Claire Street, to approximately 10 feet under St. Claire Street, where obstruction was encountered and the investigation ended (see SEH report dated November 1, 2001, *Regarding: Ashland NSP Lakefront Site Xcel Property Pipe Excavation Observation and Sampling Report*). The MGP plant is located on the south side of St. Claire Street (see page 2 of Reference 8 of the HRS documentation record at proposal, *Ashland Lakefront Project*).

According to Xcel, a fingerprint of the 12-inch clay pipe is similar to contamination found in the Kreher Park source and similar to two of the sediment samples in the Bay (see SEH report dated August 20, 2001, Docket Number SFUND-2000-0004-0043, and the Second Addendum to the Report, Docket Number SFUND-2000-0004-0042, both of these reports added to the CERCLA Docket by EPA).

Furthermore, EPA does not agree that the fingerprint studies show conclusively that none of the contamination came from the ravine source. Nor do the fingerprinting analyses demonstrate that the entire release came from a separate unidentified source. EPA reviewed all of the fingerprinting reports and determined that the conclusions drawn reflect only one of several interpretations that could have been derived from the data.

More specifically, the fingerprinting does not conclusively establish that the coal tar in the bay is not from the ravine waste and is tar generally associated with wood treatment activities as claimed by Xcel. EPA has several concerns with all three reports: the main report "Comparative Analysis of NAPL Residues from the NSP Ashland former MGP Site and the Ashland Lakefront Property (Kreher Park), the Addendum to the report the "*Comparative Analysis of NAPL Residues from the NSP Ashland former MGP Site and the Ashland Lakefront Property (Kreher Park)*," and, the Second Addendum to the report the "*Comparative Analysis of NAPL Residues from the NSP Ashland former MGP Site and the Ashland Lakefront Property (Kreher Park).*"

The main report, which EPA has supplied to the EPA CERCLA Docket, discusses the methods used to fingerprint the NAPLs in on-shore wells. Well MW-15 is located in the former ravine area, near the beginning of the former ravine (Source 1), and well EW-1 is located in the former ravine area near St. Claire Street, around the middle of the former ravine area (Source 1). Well MW-15 is screened in the backfilled ravine; well EW-1 is screened below the fill material, in the underlying Copper Falls Aquifer. Well MW-7 is located in the seep area in Kreher Park (Source 2). Xcel asserts that the fingerprinting analysis in the main report demonstrates that the NAPLs from well sample MW-15 are similar to those from well sample EW-1 and are representative of carburetted water gas tars, and are dissimilar to those in well sample MW-7 which are representative of a wood treating (creosoting) mixture. (Xcel noted that this indicated that the NAPLs in MW-7 were from a different source than the NAPLs in MW-15 and EW-1.)

The Addendum report submitted by Xcel discusses the similarity of the fingerprints in samples from wells MW-15, MW-7, and EW-1 to two sediment samples, AS-2 and AS-4, which were identified in HRS scoring as samples demonstrating an observed release attributable to the Site. This Addendum report claims the fingerprint of the aromatic fractions in the bay sediment is different from that of samples from MW-15 and EW-1, but similar to that of the sample from MW-7. Xcel commented that this calls into question the attribution of the release in the sediments to the MGP.

The Second Addendum report, which EPA has supplied to the EPA CERCLA Docket, discusses the similarity of a sample retrieved from the Kreher Park Area, south of the Wisconsin Central Railroad tracks and a sample retrieved from the interior of a 12 inch clay pipe found in the seep trench, north of the railroad tracks, 24 feet south of Well MW-7. The Second Addendum report claims that fingerprints from these two samples are highly similar, exhibiting a tar-like pattern and are similar to the fingerprint of the NAPL sample from well MW-7, and thus also similar to the fingerprint of the two Bay samples.

EPA has reviewed the main report for scientific and statistical adequacy and documented its conclusions in a report titled "Comparative Analysis of NAPL Residues from the NSP Ashland former MGP Site and the Ashland Lakefront Property (Kreher Park)" by Dr. Russell Plumb (Technical Support Center of the United States Environmental Protection Agency, National Exposure Research Laboratory, in Las Vegas, Nevada). EPA has placed Dr. Plumb's report in the EPA CERCLA Docket. Dr. Plumb's report documents the specific weaknesses EPA found regarding the adequacy of Xcel's fingerprinting study including the statistical significance of the results and the certainty of its conclusions. While Dr. Plumb's report is specifically an examination of the main Xcel fingerprinting report, the *"Comparative Analysis of NAPL Residues from the NSP Ashland former MGP Site and the Ashland Lakefront Property (Kreher Park),"* EPA has identified the same problems and issues associated with the Addendum to the Report.

Dr. Plumb identified four issues with the conclusions of the main fingerprinting study. First, the aliphatic and aromatic categories are non-specific as a classification tool. It is possible for the relative abundance of individual aromatic compounds to fluctuate without changing the total aromatic content. The authors have not demonstrated that this did not occur. Therefore, the relative abundances identified in the study does not necessarily represent the presence of any specific compound mixture. Second, the identification is only based on a two point comparison, and there are insufficient data to perform any kind of statistical assessment of the data. The study did not examine the possibility that other ratios would lead to different conclusions or that the ratio was only due to random fluctuations. Third, the two organic values of the NAPL samples do not add up to 100 percent of the mixture. If the missing material could have been analyzed and found to be either part of the aromatic or aliphatic content, the relative difference of the ratios of aliphatic to aromatic in the samples could lead to different conclusions. Fourth, the fingerprinting report does not contain any data to assess the reproducibility of the individual fingerprint patterns. Xcel did not account for analysis variation. Without replicate analyses, it is not possible to determine whether the reported differences are due to actual differences in the NAPL composition, analytical error, or non-representative sampling. There are several possible reasons for the reported differences, but there are insufficient data and lack of quality control data to sort out these possibilities (see pages 2-3 of Dr. Plumb's report, Docket Number SFUND-2000-0004-0041).

In addition, Xcel's conclusion that the contamination in Kreher Park (from MW-7) is dissimilar to the contamination in the ravine (MW-15 and EW-1) is not the only possible interpretation of the results. The conclusion is not consistent with the results presented in Xcel's own main report, Appendix B, Laboratory Data, a laboratory report dated November 16, 1999. This report states that sample MW-7 "appears to be a mixture of former MGP tar and a middle petroleum distillate. . ." and not necessarily from a wood treating facility. The report continues:

> [t]he petroleum distillate content interferes with the tar pattern and potentially the concentration of compounds such as acenaphthylene, dibenzofuran, and fluorene. It is impossible to determine from the available data whether the material in MW-7 was a plant byproduct, whether the mixture was intentionally produced by mixing tar and middle

> distillate, or whether the mixture was unintentionally produced as can occur when petroleum products and tars mix in the subsurface or in ponds.

Furthermore, the laboratory report dated December 14, 1999, included in the main report, states that:

> MW-7 consisted of a NAPL sheen and very small droplets in water, it is possible that biodegradation has acted on the NAPL to completely remove the normal alkanes and that dissolution of some of the lighter compounds has occurred. These same weathering processes would also selectively remove the light aromatic hydrocarbons and the polar compounds, found at much lower relative amounts in MW-7 as compared to the other samples. In contrast, the patterns of weathering-resistant compounds, such as the high molecular weight PAHs, are nearly the same for all three samples [MW-7, MW-15, and EW-1].

This information suggests that the laboratory that did the fingerprinting analyses itself was uncertain as to the cause of the differences between samples MW-15 and EW-1, and MW-7.

In conclusion, although there may be other sources contributing to contamination in the Bay, for purposes of listing a site on the NPL using the HRS, the results of the fingerprinting analysis do not conclusively demonstrate that the sediment contamination came from other sources, or that it did not come from the ravine source. In fact the studies point to the Kreher Park area as a probable source of the sediment contamination. The studies also point to a source on NSP property as contributing to part of the contamination in the Kreher Park area via the 12 inch clay pipe discussed above. The information presented in this support document and in the HRS documentation record are sufficient to attribute, at least in part, the release in the Bay to the NSP site.

2.1.4 Conclusion

The original HRS score for this site was 50.00. Based on the above response to comments, the score remains unchanged. The final scores for the Ashland/Northern States Power Lakefront site:

Ground Water	Not Scored
Surface Water	100.00
Soil Exposure	Not Scored
Air	Not Scored
HRS Score	50.00

REGION 6

3.1 Patrick Bayou, Harris County, Texas

3.1.1 List of Commenters

NPL-U36-5-7-R6	Governor/State correspondence dated 4/12/01 from Rick Perry, Governor, State of Texas.
NPL-U36-3-7-1-R6	Comment dated 8/13/01 from David P. Steele, of Glenn Springs Holdings, Inc., on behalf of Occidental Chemical Corporation.
NPL-U36-3-7-2-R6	Comment dated 8/13/01 from Julius A. Rexer, Jr., Senior Environmental Engineer, of the Lubrizol Corporation.
NPL-U36-3-7-3-R6	Comment dated 8/10/01 from Julius A. Rexer, Jr., Senior Environmental Engineer, of the Lubrizol Corporation.
NPL-U36-3-7-4-R6	Comment dated 8/13/01 from Bert Molina, of Equiva Services, LLC, on behalf of Shell Deer Park Refining Company (SDPRC) and Shell Chemical Company (SCC).

3.1.2 Site Description

The Patrick Bayou site consists of contaminated sediments within the Bayou, a portion of the East Fork Tributary, and associated wetlands. Patrick Bayou is one of several small bayous of the Houston Ship Channel (HSC) located within the lower portion of the San Jacinto River Basin as it enters Galveston Bay, in southeast Texas. Pesticides, polynuclear aromatic hydrocarbons (PAHs), metals, and polychlorinated biphenyls (PCBs) have been detected in sediments in the Bayou since the early to mid-1990s. For several years, Patrick Bayou has received municipal wastewater treatment plant effluent, storm water runoff, and permitted industrial wastewater discharges from adjacent industrial facilities and nearby urban/residential areas. These discharges are suspected to be the primary sources of the sediment contamination. The site is being placed on the NPL because sediment contamination has been detected in the wetlands bordering the Bayou and poses a threat to downstream fisheries.

Patrick Bayou is located in a mixed urban, highly industrialized petrochemical area in southeast Harris County approximately 1 mile north of Deer Park, Texas. Most of the upper portion of the Bayou consists of a series of open, concrete-lined storm water channels and large metal/concrete culverts. These structures were installed to receive storm water runoff and permitted wastewater discharges for erosion control south of State Highway (SH) 225. Contaminated sediments have been documented within the bounds of Patrick Bayou, originating downstream from a series of culverts located a mile north of SH 225 and extending to its convergence with the HSC, and a portion of the East Fork Tributary. Patrick Bayou drains a total distance of 2.85 miles north to its confluence with the HSC. The Bayou is normally 200 feet wide expanding to 600 feet within the last ¼ mile before entering the HSC.

Prior investigations conducted by the city of Houston in 1993 and 1994 along the HSC and its tributaries documented high to moderate levels of pesticides, PAHs, cadmium, chromium, mercury, nickel, zinc, and PCBs accumulating within Patrick Bayou sediments. Subsequent investigations were conducted in July 1994 during a joint Texas Natural Resource Conservation Commission (TNRCC)/EPA Ambient Toxicity and Water and Sediment Quality Survey. These investigations confirmed the accumulation of the following substances within Patrick Bayou sediments: arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, zinc, hexachlorobenzene (HCB), bis-2-ethylhexyl phthalate, PAHs, PCBs, and pesticides. Mercury levels were documented in the sediments as high as 8,300 Fg/kg, with PCB levels ranging from 806 to 4,150 Fg/kg. PAH levels were detected as high as 53,600 Fg/kg. TNRCC collected sediment samples from the Bayou as part of an Site Inspection in July 2000, which showed mercury levels as high as a 41,500 Fg/kg, and PCB levels as high as 300,000 Fg/kg.

The upper portion of the Bayou and several small islands within the Bayou contain extensive wetland vegetation affording a natural habitat for waterfowl and migratory birds. Significant populations of fish and marine mammals have been documented near the mouth of Patrick Bayou. Local fishermen fish for blue crab and catfish along the HSC even though human consumption has been restricted by the Texas Department of Health (no-consumption advisory for children and women of childbearing age) due to high levels of dioxin. A fish kill was reported on March 21, 1990 in the East Fork Tributary of Patrick Bayou. A second fish kill was reported on September 10, 1990 in the Bayou.

3.1.3 Summary of Comments

Texas Governor Rick Perry supported listing stating that the Texas Natural Resource Conservation Commission and the Attorney General's Office have actively sought to address this site under state programs; however, those attempts have been unsuccessful.

Four comment letters were received by the docket in opposition to listing of the Patrick Bayou site on the NPL. The comments generally concerned two issues: sample comparability and wetlands classification.

David P. Steele of Glenn Springs Holdings, Inc., on behalf of Occidental Chemical Corporation (Occidental), submitted comments pertaining to "how data and observations collected in the Site Screening Investigation were used in the development of the score for the 'site' using the Hazard Ranking System." Occidental asserted that their "comments were prepared to address the issue of background sample selection and use for the determination of a release and the inappropriate identification of HRS wetlands as target environmental receptors." Occidental stated that their comments "focused on two main technical issues: 1) the validity of the conclusion of an 'observed release' by reference to samples used to represent background conditions, which were not appropriately representative and 2) the characterization of wetlands as the sensitive receptors for scoring of an 'environmental threat'." Occidental stated that both of these issues were of "significant importance in the derivation of the 'site' score." According to Occidental, the "deficiencies in the scoring process identified in the comments should be addressed and remedied, by additional data collection and re-evaluation of site conditions, and the scoring revised to determine whether the 'site' poses sufficient hazard to be included on the National Priorities List."

Julius A. Rexer, Jr., of the Lubrizol Corporation (Lubrizol) prepared two identical comment letters received on different dates that addressed "wetlands classification and inclusion as a target receptor in the HRS Site Score; documentation to demonstrate that wetland areas are eligible for HRS scoring; and, the

representativeness of the analytical data for background samples." Lubrizol reported that the Lubrizol Corporation - Deer Park Facility is located adjacent to Patrick Bayou in Deer Park, Texas and has been dedicated to meeting state and federal goals to improve the quality of industrial wastewater effluent goals by complying with pollutant discharge elimination permits for the facility that were prepared by the state of Texas and the U.S. Environmental Protection Agency.

Bert Molina, of Equiva Services LLC, on behalf of Shell Deer Park Refining Company and Shell Chemical Company (Shell), submitted comments and information which, according to Shell, "demonstrate that Patrick Bayou should not be listed on the NPL." Shell stated that their "comments were prepared to address the issues of: 1) other regulatory programs that are currently addressing sediments in Patrick Bayou; 2) wetlands classification and inclusion as a target receptor in the HRS Site Score; and 3) background sample selection and use for the determination of a release in the HRS Site Score."

3.1.3.1 Sample Comparability

Both Occidental and Shell noted that, for the Patrick Bayou site, "chemical evidence was employed to demonstrate that a [HRS observed] release has occurred" for the human food chain and environmental threats of the surface water overland/flood migration pathway. Occidental and Shell stated that "[t]his requires that background samples be compared with 'site' or 'release' samples to determine if the 'site' samples are sufficiently higher in concentration (three times) than the background samples." According to Occidental and Shell, "[t]he proper evaluation of 'site' samples thus relies heavily on the selection of appropriate background samples: in location relative to the 'site' samples, in similar physical characteristics and in similar flow regime." According to Occidental and Shell, the "control sites" used to establish an observed release in the HRS documentation record at proposal "are not appropriate to determine if concentrations are elevated and if a release has occurred."

Specifically, Occidental and Shell stated that "background sediments should be comparable, in terms of sediment characteristics, organic carbon, and flow regime, to site sediments." According to Occidental and Shell, "[t]he HRS guidance requires that this be done, specifically stating that samples should try to control for the depth of sampling, the overlying flow regime, and the time of deposition." Occidental and Shell stated that "[t]he HRS guidance also specifically states that appropriate background samples should be similar in terms of 'grain size, sampling date, depth, etc.'" Further, Occidental and Shell claimed that "[t]he background samples were also probably not contemporary, in terms of timing of deposition, to those site samples." According to Occidental and Shell, "[i]n each case, the differences between background and site sediments (e.g., larger grain size, less organic carbon, more recent timing of deposition) are likely to decrease concentrations of chemicals in the background samples."

In response, it is first necessary to understand the purpose of the background sample collected at the Patrick Bayou site. EPA is not documenting that specific contaminants come from specific sources. Rather, the contaminated sediment plume is considered to be the source, the release, and the site. In HRS Section 1.1, a source is defined as;

> any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance. Sources do not include those volumes of air, ground water, surface water, or surface water sediments that have become contaminated by migration, except: in the case of either a

> ground water plume with no identified source or contaminated surface water sediments with no identified source, the plume or contaminated sediments may be considered a source.

The HRS does not require that background samples be compared to release samples to document contaminated sediment plumes, since these are areas "that have become contaminated by migration." At the Patrick Bayou site, the presence of hazardous substances in sediments in an area where these substances are not ubiquitous, establishes an observed release. The background samples were included in the HRS documentation record at proposal to support the establishment of an observed release in Patrick Bayou.

Again, at this site, EPA is not attempting to attribute the release to any particular source or facility described in the HRS documentation record at proposal. There are a large number of past and current facilities that may have contributed to the contamination in Patrick Bayou, and these may be identified based on further study. EPA seeks only to identify contamination in the Bayou as needing further study and possible remediation. The background samples collected during the SSI, support this purpose. The eight background samples collected from upstream of the sediment plume provide a general idea of the extent of the plume. In addition, since no organic compounds were detected in any of the eight background samples, these samples also serve to establish that the organic compounds found in Patrick Bayou are not ubiquitous in the area. Despite the limited purpose for employing background samples at this site, EPA believes the samples were appropriate.
The full extent of the source and release, that is— the sediment plume, is unknown, but will be further evaluated during the RI/FS. The samples collected to date from the Bayou define the location of the release for HRS purposes.

The HRS does not provide any criteria for selecting background samples, except that background samples must be compared to similar types of release samples (HRS Section 4.1.2.1.1). HRS Section 2.3 states that "[t]he minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance in the media significantly above the background level" but does not specify how that background level should be established or that it necessarily be established based on sampling data. In the case of the Patrick Bayou site, however, EPA chose to compare the release sediment sample concentrations of pesticides, PCBs, metals, polycyclic aromatic hydrocarbons (PAHs), and other organic compounds to the background levels established for these hazardous substances in background sediment samples SE-01, SE-02, SE-03, SE-10, SE-11, SE-12, SE-15, and SE-16. HRS section 4.1.2.1.1 requires that EPA "[l]imit comparisons to similar types of samples and background concentrations." When selecting a background sample location, EPA pursues the best available and practicable reference point from which to judge whether a release has occurred from the site.

EPA established background levels of the hazardous substances found in Patrick Bayou sediments by collecting background samples that were as comparable as possible to release samples, given the site conditions (upstream culvert, tidal influence, various flows). At the time of the Screening Site Inspection (SSI), EPA was able to establish background levels for the Patrick Bayou site based on eight samples that meet the HRS criterion for background samples (HRS Section 4.1.2.1.1), located upstream of the contaminated sediments in Patrick Bayou. When compared to release samples collected farther downstream, these background samples satisfy the HRS criteria for an observed release (see HRS Section 2.3) for a number of hazardous substances. For the Patrick Bayou site, EPA determined that among the surface water analytical data available, the eight sediment samples used as background samples in the HRS documentation record at proposal provided not only a reasonable estimate of sediment background

conditions in the site vicinity, but also provided a reasonable basis for comparison with the sediment observed release samples.

More in depth discussions of sample comparability in terms of sediment characteristics, flow regime, grain size, organic carbon, sampling depth, and time of deposition are presented later in this support document.

Occidental and Shell quoted the EPA's HRS training course (www.epa.gov/superfund/resources/hrstrain/htmain/index.htm, last updated May 14, 2001):

- "[i]n selecting background samples to establish background level by chemical analysis, the background and release samples must be similar so that analytical results can be compared for 'significance' above background. Therefore, descriptions of the sampling locations and procedures are needed to establish similarity between background and release samples."
- "under 'Examples of samples that should not be compared', the HRS training course lists 'Samples taken from different flow regimes within a stream' and 'Samples taken a significant time period apart.'"
- "in an interactive part of the tutorial, the training program asks 'What kind of information could you use to show that sediment samples are similar?' The answer is 'Sampling location (depth, position in stream, etc.), grain size, sampling date, etc.'"

Occidental and Shell concluded that the "'background' samples used in the Screening Site Investigation do not conform to the guidance of the HRS training course and, consequently, are not comparable to those taken from Patrick Bayou."

In response to the commenter's assertion that EPA guidance contained in the HRS Internet Training Course was not followed in selecting background sampling locations, EPA disagrees and contends that the best available background samples were collected and included in the HRS documentation record. The course does recommend that documentation be provided to justify the comparability of the background and release samples, but it also states that "[t]he nature and extent of the documentation required depends on the medium of concern and the potential dissimilarity of the samples" (HRS Internet Training Course, Section 6: Likelihood of Release, Observed Release, Selecting Appropriate Background Samples). In the case of Patrick Bayou, many of the site characteristics, the upstream concrete-lined culvert, tidal influence, and variety of flow characteristics, created a great potential for dissimilarity between release and background sample sediments. Therefore, EPA provided documentation of the samples collected in the SSI field notes (Reference 10 of the HRS documentation record at proposal), including photographs and descriptions of sample location, depth, grain size, and sediment characteristics. The commenters pointed out differences in several of the descriptions of sediment samples, but EPA has addressed these differences by using multiple background samples, as discussed on page 29 of the HRS documentation record at proposal.

Lubrizol commented that the "analytical results for background samples are not representative of actual background concentrations and these results cannot be used to document an observed release in the calculation of the HRS score." Lubrizol stated that "[t]he background samples must be similar in type of sediment as the release samples that were collected to document an observed release." Lubrizol stated that "[s]ince this was not the case for Patrick Bayou ... the HRS score for this site is invalid." Lubrizol quoted page 58 of the HRS Guidance Manual (HRSGM, Reference 3 of the HRS documentation record at proposal) as stating that:

> Background and release samples must be from the same medium (e.g., soil, water, tissue) and should be as similar as possible. ... Sediment type should be similar in background and release samples. Fine clay particles are more likely to adsorb hazardous substances such as metals and hydrophobic organic compounds than are larger particles or particles with a predominantly sandy matrix.

Lubrizol stated that "[u]nbiased background samples that accurately reflect the upstream concentrations of constituents of concern are necessary because the background sample analytical data are used to evaluate whether an observed release is present." Lubrizol summarized the procedures for establishing an HRS observed release, as stated on page 58 of the HRSGM:

> In order to document and observed release in accordance with this manual, the concentration of a constituent in a release sample must exceed the Sample Quantitation Limit for constituents that were not detected in background samples or the concentration of a constituent in a release sample must exceed three times the detected concentration in a background sample. If the sediment types for background and release samples are not similar, the above criteria cannot be accurately applied to determine whether an observed release is present.

Lubrizol stated that "[t]he calculation of the HRS score for Patrick Bayou was based on EPA's assertion of an observed release documented by comparison of analyses of background sediment samples with site sediment samples." Lubrizol concluded that "the samples compared were inappropriately dissimilar and cannot be used to document an observed release. Accordingly, the HRS score for the Patrick Bayou site is invalid." Lubrizol asserted that "[w]hen constituents of concern are not detected in the background samples due to the dissimilarities between the background and release samples, the interpretation to an observed release will be artificially biased. In this instance, it is biased towards documenting an observed release."

Lubrizol stated that "[b]ackground sediment samples were collected from three areas that are located upstream of the site ... east of the confluence of Patrick Bayou and the HSC (samples SE-01, SE-02, and SE-03), south of the City of Deer Park outfall (sample SE-15/16), and in the East Fork Tributary south of the Praxair outfall (samples SE-10, SE-11, and SE-12)." [2-69, 3-69] According to Lubrizol:

- "[t]he composition of the sediment sample SE-15/16 is described as 'Sand and gravel with leaves, twigs, and debris' on pages 27 and 28 in the Screening Inspection Field Log Book notes [Reference 10 of the HRS documentation record at proposal]."
- "[t]he composition of samples SE-01, SE-02, and SE-03 are generally described as sand in these notes."
- "[t]he descriptions of the release samples vary but are generally described as being comprised of mud, muddy clay or clayey silt in the notes."

Lubrizol stated that "[t]he sediment types for the background samples and release samples are not similar and the background samples SE-01, SE-02, SE-03, and SE-15/16 cannot be used to document an observed release." According to Lubrizol, "[t]he sediment type for these background samples is sand or gravel while the release samples are comprised of clay or clayey silt." Lubrizol claimed that "[i]n the HRS Documentation Record [at proposal] ... , the U.S. EPA has made a comparison of background samples that have a low affinity for the constituents of concern to the release samples that have a high affinity for these same constituents in order to determine whether an observed release is present." Lubrizol asserted that

"the determination of a whether an observed release is present was biased towards finding an observed release by the collection of dissimilar background samples."

Lubrizol concluded that "[b]ackground samples from the East Fork Tributary are similar in sediment type to the release samples" but, "these samples cannot be used to represent background concentrations for constituents of concern in the HSC because they were not collected upstream of the confluence of HSC and Patrick Bayou." Lubrizol stated that "these background samples cannot be used as the only samples to represent background concentration in Patrick Bayou because they were collected from the East Fork Tributary and not from the upstream portion of Patrick Bayou." Lubrizol claimed that "[a]dditional representative background sediment samples of the same sediment type are required to determine the background concentrations of the constituents of concern in Patrick Bayou and the HSC."

Similarly, Occidental and Shell stated, "it is imperative that the characteristics of the 'background' sediments closely match those of the site's sediments." Occidental and Shell stated that "[t]he background samples differ from the Patrick Bayou samples in several important respects ..., all of which preclude their usefulness as appropriate background samples." Occidental and Shell noted that:

- Site Screening Investigation background samples were collected from locations in the East Fork and main stem of Patrick Bayou, and from three locations (SE-01, SE-02, and SE-03) in the HSC. According to Occidental and Shell, "[t]hese three samples were collected in beach areas on north and south shores of HSC, were composed of sediments from a depth of 0 to 18 or 0 to 20 inches, which consisted of sand with small pieces of organic matter."

- an additional "[t]hree samples in the East Fork of Patrick Bayou (SE-10, SE-11, SE-12) were collected from stream bottom upstream of Praxair discharge. These samples were collected from 0 to 8 or 0 to 10 inches deep." Occidental and Shell commented that "[a]t the time of the sampling, the creek was dry and there was no overlying water" and that "[t]hese samples consisted of very fine to heavy clay with organic materials at surface."

- sample SE-15 and its duplicate, SE-16, were "collected from concrete lined channel upstream of the Deer Park municipal wastewater treatment plant discharge from depth of 0 to 4 inches and consisting of sand and gravel."

Occidental and Shell also contended that "[t]he background samples were not representative of the same quality characteristics as the 'site' sediment samples." Specifically, Occidental and Shell stated that "[a]ccording to the sampler's descriptions of sediments ... , sediments taken from Patrick Bayou are primarily fine silt or mud." Occidental and Shell asserted that, "[i]n contrast, ... sediments from most of the background sites are sand or gravel." According to Occidental and Shell, "the background samples were, on average, about 60% sand, while the 'site' sediments averaged about 20%." Occidental and Shell opined that "[i]n the cases in which the background samples are not sand, as in the background samples from the east branch of Patrick Bayou, the samples are potentially from the channel bottom (e.g., clay which forms the bottom of the stream channel) as opposed to deposited sediments."

In response, as stated previously, the contaminated sediment plume is the source and the release at the Patrick Bayou site. Therefore, no background samples are required to demonstrate a release to the environment for non-ubiquitous contaminants. Nonetheless, EPA was able to present the best available background samples in the HRS documentation record at proposal which defined the approximate extent of the contaminated sediment plume and established a background level for the hazardous substances

found in Patrick Bayou. Although all background samples were not comparable to all release samples (which would be important if EPA were trying to attribute a particular contaminant to a particular source), each of the release samples correlate to at least one background sample.

As described in the SSI field notes (Reference 10 of the HRS documentation record at proposal), the background samples were collected from a variety of sediment types including:

- sand and gravel (SE-15, SE-16),
- sand (SE-01, SE-02, SE-03),
- very fine sediments (SE-10),
- silt (SE-12), and
- clay (SE-11).

The release samples were collected from:

- gravel, with some sludge (SE-17), which can be compared with samples SE-12, SE-15, or SE-16;
- sandy loam (SE-13), which can be compared with SE-01, SE-02, SE-03, or SE-10;
- sand to mud (SE-04, SE-07, SE-08, SE-09, SE-24, SE-26), which can be compared with samples SE-01, SE-02, SE-03, SE-12, SE-15, or SE-16;
- clay silt to sand, mud (SE-05, SE-06), can be compared to SE-01, SE-02, SE-03, SE-11, or SE-12;
- sand to clay (SE-27, SE-28), comparable to samples SE-01, SE-02, SE-03, SE-10, or SE-11;
- sandy clay with small gravel (SE-18), comparable to samples SE-01, SE-02, SE-03, SE-11, SE-15, or SE-16;
- mud (SE-22), which may be comparable to samples SE-10 or SE-12; and
- muddy clay (SE-14, SE-19, SE-23, SE-25), comparable to SE-11 and SE-12.

On page 29 of the HRS documentation record at proposal, EPA explicitly stated that a variety of background locations were selected to adequately represent different surface conditions and flow characteristics encountered at the site. Background samples were collected from a variety of "flow channels, sediment conditions and a wide range of surface water flow characteristics" (HRS documentation record at proposal, page 29). Three background sediment samples were collected from the HSC, two from upstream in Patrick Bayou, and three from the East Fork Tributary. None of these samples contained any of the organic analytes that were found further downstream in release samples, (namely carbon disulfide, cyclohexane, benzene, methylcyclohexane, toluene, chlorobenzene, ethylbenzene, xylenes (total), isopropylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, hexachlorobutadiene, 2-methylnapthalene, hexachlorobenzene, aldrin, endosulfan I, endrin, Aroclor-1248, Aroclor-1254, and Aroclor-1260). Page 67 of the HRSGM states that "[a] background level for a site provides a reference point by which to evaluate whether or not a release of a hazardous substance from the site has occurred." Since none of the organic analytes were detected in any of the eight background samples, EPA considers the background level or reference point for these substances to be zero.

The function of the background samples in the HRS documentation record at proposal were to establish a background level for the contaminants identified in Patrick Bayou sediments. EPA accomplished this goal by evaluating concentrations of hazardous substances in upstream locations. Low levels of inorganic compounds and non-detect concentrations of organic compounds were found in the upper reaches of Patrick Bayou and the East Fork Tributary. Background sediment samples SE-15 and SE-16 suggest the upper boundary of the sediment plume in upstream Patrick Bayou. Likewise, sediment samples SE-10, SE-11, and SE-12 suggest the sediment plume boundary in the East Fork Tributary. EPA addresses the issues of potential bias, sediment quality, and sampling depth later in this support document.

Occidental and Shell stated that "the SSI samples were not analyzed for sediment grain size or organic carbon." Occidental and Shell asserted that it is, therefore, "necessary to rely on the sampler's descriptions of the sediments." Occidental and Shell included tables with their comment letters (Table 1, in both cases) that included their summaries of the samplers' descriptions. Occidental and Shell stated that "particulate organic carbon tends to be lighter than inorganic sediments, so organic carbon concentrations tend to correlate with fine sediment particles." Citing "the Containment Assessment of Patrick Bayou [Reference 4 of the HRS documentation record at proposal]," Occidental and Shell asserted that "[t]his is a common occurrence in general and specifically occurs in Patrick Bayou, where there was a highly significant relationship between organic carbon and percent fine particles in sediments." Occidental and Shell postulated that, "[a]s with fine particles, the concentrations of toxic chemicals, especially the hydrophobic organism, is a strong function of organic carbon." "Therefore," concluded Occidental and Shell, "much of the differences between Patrick Bayou and background is attributable to failure to control for sediment quality between the two sites."

In addition, Occidental and Shell stated that "the differences in grain size between the background samples and the Patrick Bayou samples can also be inferred from the concentrations of aluminum and iron presented in the docket." Occidental and Shell stated that "[t]hese two metals are common earth metals that are key components of clays and therefore can be used as a surrogate for fine inorganic particles." According to Occidental and Shell, "[t]he concentrations of these metals were also not affected by sources in the Bayou." Occidental and Shell stated that "[c]onsistent with their sandy nature, the background sites from the HSC had aluminum concentrations of approximately 500 mg/l, which was 10 to 20 times less than the average for Patrick Bayou" and that "[t]he differences in the concentrations of aluminum and iron between the background and site samples in the downstream bayou were less significant." Occidental and Shell opined that "[t]his issue is of critical importance because concentrations of metals and other pollutants in sediments are intimately associated with the concentrations of fine particles." According to Occidental and Shell, "this fine sediment fraction is relatively enriched in hazardous constituents compared to the coarser sediment fractions." Occidental and Shell asserted that "many analysts will normalize data to aluminum to control for this effect when comparing sediments."

Occidental and Shell claimed that the "background sediments presented in the SSIR [Screening Site Inspection Report] are not comparable in these specific and other important characteristics" because "[b]ackground samples, on average, contained coarser sediments, were sampled from shallower depths, and were taken from more erosive areas than site soils." In addition, Occidental and Shell claimed that "background samples had less aluminum and clay, indicating relatively lower proportions of fine clay particles in the background sediments compared to site sediments." Occidental and Shell stated that "[a]lthough organic carbon was not analyzed, previously collected information and the information on flow regimes, grain size, sediment depth, and aluminum and iron concentrations suggest that background samples would have also been relatively impoverished in organic carbon."

In response, EPA has already established, elsewhere in section 3.1.3.1 of this support document, that the background samples collected at the Patrick Bayou site identify the approximate extent of the contaminated sediment plume and establish that the hazardous substances found in Patrick Bayou are not ubiquitous in the area. Furthermore, as previously stated in this section of the support document, EPA has determined that the background sediment locations were not biased towards establishing an observed release. EPA compared concentrations in each release sample to the concentrations in eight background samples of various sediment types and grain sizes to avoid such a bias.

EPA's decision not to consider grain size or total organic carbon (TOC) for metals and organic compounds in establishing background levels was reasonable. EPA decided that using the highest concentration of each substance (both organic and inorganic) in each particle size range used in the HRS documentation at proposal would be a conservative approach for establishing background levels. It would be less conservative to compare each release sample to a single background sample that represented the most similar flow characteristics. Rather, each release sample was compared to eight background sediment samples collected from four different sediment types at the Patrick Bayou site and the highest concentration for each substance was used as a background for all of the release samples.

In response to the commenters' assertion that aluminum and iron concentrations be considered when interpreting analytical results for HRS purposes, these comments are untimely. The HRS, which was adopted and subject to public comments in 1990, is a simplified determination of relative risk, and does not include this correlation of soil metals concentrations to grain size. Grain size evaluation by analysis of percent aluminum and iron is not required by the HRS or the EPA Contract Laboratory Program and is a comparison beyond the scope of the resources allocated to the screening process of site assessment. The HRS is a screening tool employed by EPA to determine which sites are NPL caliber, that is; which sites merit further use of limited Federal resources. EPA considers it reasonable to rely on the samplers descriptions of sediment types as recorded in the SSI field notes (Reference 10 of the HRS documentation record at proposal). Furthermore, the analytical data results for organic analytes documented by References 13, 14, and 15 of the HRS documentation record at proposal, report non-detect concentrations for all eight background samples, including those background samples consisting of finer grade sediments and higher concentrations of aluminum. EPA addresses the issues of flow regime and sampling depth later in this section and in section 3.1.3.1.1 of the support document.

Occidental and Shell stated that "[i]n order to provide an appropriate basis for comparison, the background sampling locations must be similar to the release sampling locations in terms of flow regime, which in turn affects both time of deposition and capacity for accumulating hazardous substances ... because chemical concentrations in sediments are a function of sediment depth, timing of deposition and sediment characteristics such as grain size, concentrations of organic carbon, etc." According to Occidental and Shell, "[t]he flow regimes of the background sampling sites were also very different from the Patrick Bayou sites." Occidental and Shell claimed that "[t]he background samples were taken from highly erosive areas: either fast flowing segments of the upper stream like upper bayou or erosive areas on the banks of the HSC. (Sediments near the shore of large aquatic systems are frequently subject to erosive mixing from naturally occurring waves, and this effect is greatly exaggerated in the HSC by wake from large boats and ships.)" Occidental and Shell asserted that, "[i]n contrast, samples taken from the Bayou itself tended to be from quiescent mid-channel areas of a very small, relatively quiet bayou." Occidental and Shell stated that "[p]article sizes and depositional history, both of which profoundly affect chemical concentrations, will depend on the flow regime."

In response, EPA disagrees with the commenters' suggestions that differences in flow regimes effect EPA's conclusion that an observed release has been documented in Patrick Bayou. As presented in Table 4 of the HRS documentation record at proposal, samples SE-01, SE-02, and SE-03 were collected from the HSC, samples SE-10, SE-11, and SE-12 were collected in the East Fork Tributary, while samples SE-15 and SE-16 were collected from the south end of Patrick Bayou. These background samples were collected from the best available background locations, upstream of Patrick Bayou and closest to the contaminated sediment plume to reflect the conditions up-current of the site. The locations of the background samples were chosen so as to be upstream of the area being investigated, but sufficiently close to the Bayou in order to be as reflective of the environmental conditions as possible. These provide reasonably analogous

flow and depositional characteristics for the release samples in the East Fork Tributary, Patrick Bayou, and the HSC (Table 4 and Table 6 of the HRS documentation record at proposal). Not all background samples were from fast flowing or erosive areas, as alleged by the commenters.

Furthermore, in the case of the Patrick Bayou site, there are a variety of sediment types and flows within the Target Distance Limit (TDL), which made collecting comparable background sediment samples challenging. TNRCC and EPA addressed this issue by establishing a background level of contamination outside of the contaminated sediment plume in Patrick Bayou through the collection of eight background sediment samples upstream of Patrick Bayou. Low levels of metals and no levels of organic hazardous substances above Sample Quantitation Limits (SQLs) were detected in the eight background sediment samples collected from various locations as presented in Table 5 of the HRS documentation record at proposal. Release samples located in the East Fork Tributary, Patrick Bayou, and the HSC revealed levels of metals greater than three times the background samples and levels of organic compounds greater than the SQLs, thereby further substantiating an observed release for the Patrick Bayou site. The function of the background samples was to approximate the extent of contamination, not to attribute the contamination to any source.

Occidental and Shell opined that "[t]he very shallow sediment depths found in the background samples from the upper reaches of the Patrick Bayou, an average of less than 7 inches ... demonstrate that the sedimentation dynamics were profoundly different from those in the lower reaches of the Bayou." Occidental and Shell further stated that "the description of the substratum and stream course in the upper reaches of the East Branch of Patrick Bayou indicates that it is likely that these background samples were largely or partly stream bottom as opposed to true aquatic sediments." According to Occidental and Shell:

> The stream bottom in this area is described as containing '...many small rocks and gravel and the underlying **soils** were hard packed' (... bolding added for emphasis). Rather than true aquatic sediments, which are generally very loose and well sorted with respect to particle size, this description suggests that the upstream background areas were erosional areas with little to no sediment at all. The description above '...very poorly sorted material that is hard packed' - seems much more descriptive of soils or other more stable geologic materials than of stream sediment. Since they could not use the sediment sampling device (the core), the samplers dug into the material at the bottom of the stream with a spatula. As opposed to true sediments or bed load carried from upstream sources, the samplers apparently sampled the soil or subsoil forming the basement of the stream. Thus the background samples are likely to be totally different medium (e.g., subsoil or soil) than the true aquatic sediments collected at the site. Although fine-grained in nature, the sampled material would be in less intimate contact with waters travelling [sic] through the stream than the more mobile, saturated materials sampled at the site, thus reflecting different regimes.

Occidental and Shell suggested that "several of the background samples were potentially not sediments at all, but were likely soil or subsoil forming the bottom of the stream channel." Occidental and Shell concluded that, for these reasons, "the background samples are not consistent with the requirements of the HRS guidance and cannot be used to determine whether a release has occurred."

In response, EPA disagrees with Occidental and Shell's assertion the background samples collected from the upper reaches of Patrick Bayou cannot be used to establish an observed release to Patrick Bayou. In response to the commenters' assertion that some background samples were "stream bottom," as opposed

to “true aquatic sediments,” EPA considers the background sediment samples collected from the upper reaches of the East Fork Tributary and Patrick Bayou to be appropriate for comparison to the release samples collected in Patrick Bayou, the East Fork Tributary, and HSC. Grab samples SE-10, SE-11, SE-12, and SE-13 were collected in the East Fork Tributary. Grab sample SE-10 was described in the field log as “very fine tan sediments with organic materials” (HRS documentation record at proposal, Reference 10, pg. 22). Sediment sample SE-11 was described as “tan to gray heavy clay” (HRS documentation record at proposal, Reference 10, pg. 23). The field log describes sample SE-12 as “very fine gray silt” and SE-13 as “gray sandy loam” (HRS documentation record at proposal, Reference 10, pgs. 24-25).

Sediment samples were also collected from Patrick Bayou, upstream of the confluence with the East Fork Tributary. As stated on page 31 of the HRS documentation record at proposal:

> Background sample location SE-15 with duplicate sample SE-16 was selected within the concrete-lined upper portion of Patrick Bayou upstream of any known outfall source to represent typical gunite-lined lower portions of the Bayou located between sampling Stations No. 9 and No. 6 illustrated in Figure 3 [of the HRS documentation record at proposal] and Photo #29 [of Reference 10]. Background sediment samples SE-15 and SE-16 were collected using a dedicated stainless steel bowl and spoon since the channel was concrete lined and using the coring sampling tool was determined unsuitable. A composite sample was collected from deposits up to 4 inches thick of fine sediments lying within typical low-flow portions of the channel.

Based on these descriptions, EPA is confident that the background samples collected from the upper reaches of the East Fork Tributary and Patrick Bayou are sediment and not “stream bottom.”

3.1.3.1.1 Depth and Time

Occidental and Shell purported, in several parts of their comments, that “[t]he background samples do not represent the same depth or time of deposition as the ‘site’ sediment samples” in the HRS documentation record at proposal. According to Occidental and Shell:

> The sediment samples were collected with variable methods and from variable depths. For samples in true sediments (the three HSC samples and all of the ‘site’ samples), the sediments were sampled with coring devices pushed into the sediments to the point of refusal. In contrast, the background samples from the upper Patrick Bayou could not be cored, because the sediments were too hard and too coarse. These samples were dug with a spatula. The different methods resulted in variable sampling depths, which were shallower for background samples than for Patrick Bayou samples. On average the ‘site’ sediments were sampled to about 17 inches. ... This contrasts with an average depth of less than 11 inches for all of the background samples. Even shallower background samples were taken in finer grained soils from the upper bayou, which were more comparable to the ‘site’ sediments... Sampling similar depths is important because different sediment depths generally pertain to different periods of deposition. As chemical loading to urban aquatic systems has undergone dramatic changes over the last century, the final concentration for a sediment sample depends intimately upon the depth of the core.

Shell and Occidental contended that "[t]he background samples in the upper Patrick Bayou watershed are also likely to be dissimilar to those downstream in terms of their time of deposition." Occidental and Shell stated that "[t]hese background samples from the west branch of the Bayou (SE 15/16) were taken from the concrete culverts," which "are specifically designed to transport large amounts of water very quickly, a feature that prevents long-term storage of sediments." "Similarly," asserted Occidental and Shell, "the background samples taken from the east branch of the Bayou were taken from a stream like corridor that also experiences very high flows and periodic scour." Occidental and Shell concluded that:

> the "background" sediments in the culverts and the East Branch of the Bayou (if any true sediment is present in those samples) are likely to be recently deposited, potentially within the last year or so since the last major flood event. In contrast, the sediments of the bayou have likely been deposited over the last several decades or more.

According to Occidental and Shell, "[i]t is well recognized that timing of deposition is a critical factor affecting sediment concentrations of most all of the chemicals of concern, because releases of these chemicals have been curtailed dramatically over the last several decades." Occidental and Shell stated that, "[a]s with most cases of sediment contamination in the US, the chemicals in the Patrick Bayou samples are likely based on releases that occurred decades ago." According to Occidental and Shell, "[p]roper background characterization would require sampling of background locations that reflect the same time of deposition as the 'site' or 'release' sediments." "Therefore," concluded Occidental and Shell, "even though they were sampled on the same day, the background samples violate the intent of the HRS recommendation that background samples represent contemporary measures of background concentrations."

In response to the comment that the background sediment samples are not representative of the same "time of deposition" as the release sediment samples, comparison of these background and release samples does establish that a release has occurred at the Patrick Bayou site. Given the vagaries of sediment transport and deposition in streams, it cannot be assumed that sediments in similar depths at different locations in a stream are approximately the same age (were deposited at the same time). The background and release samples are similar in that they were all taken from the top of the sediment profile; from the bottom of the stream (top of sediments) down to the maximum depth possible. All of the sediment samples were collected within 2 days of each other. Even if the sediments contained in the release samples were deposited in the Bayou prior to the sediments in the background samples, this does not mean the release did not occur. The newer, "scoured," background samples simply represent current background conditions. An old release, even "decades old," is still a release, even if has been "washed out" of the background sediments or "buried" beneath them. Background sample locations are specifically chosen to be outside of the release (the sediment plume, in this case), not within it. The comments submitted by Occidental and Shell simply support a scenario that a release has occurred in the past, and contaminated sediments are now washing downstream.

Furthermore, the background and observed release sediment samples were collected at variable depths and with two types of methods due to the fact that the depths of available sediment varied from location to location for both the release and background samples. At the furthest upstream background sample location (SE-15/16), the sediment layer was only 4 inches thick above a concrete bottom. As such, the 0 to 4 inch background composite samples captured the entire sediment layer. Where the sediment layer was thicker in the other samples, larger composite samples were collected. Since each of the observed release and background composite samples represents the entire sediment layer, it is appropriate to compare them.

These samples provide a reasonable basis for concluding that an observed release to surface water has occurred at the site.

3.1.3.1.2 Tidal Effects

Occidental and Shell stated that "[t]idal effects were also neglected in providing comparative background sample locations" in the HRS documentation record at proposal. Occidental and Shell stated that, "[s]ince Patrick Bayou is a tidal water body, experiencing up to 2 feet of tidal stage change (reaching up the East Fork past Tidal Road), a significant component of flow is from the HSC into Patrick Bayou during rising tides." According to Occidental and Shell, the SSI report described "multiple pollution sources in the HSC, and these could be sources to Patrick Bayou sediments."

Occidental and Shell claimed that "[t]he 'background' sample locations in upstream Patrick Bayou were in non-tidal areas, and thus could not serve as a background for HSC sources." In addition, Occidental and Shell stated that they considered the three samples collected from the HSC to be "potentially inappropriate for HSC sources, since they were well upstream of the mouth of Patrick Bayou, where the effects of tidal flux from downstream HSC sources of hazardous substances could not be reflected." Occidental and Shell further stated that "the orientation of the mouth of Patrick Bayou predisposes a direction of water and sediment flow from the **downstream** (closer to the ocean) direction during high tide" (emphasis added by Occidental and Shell). Occidental and Shell suggested that "[s]ample locations in the HSC below the mouth of Patrick Bayou would be reflective of a background from this transport mechanism." Occidental and Shell cited section 5.2 of the HRSGM as stating that in tidally influenced areas "it is especially important to be aware of attribution problems that might be presented by non-site sources of contamination, upstream or downstream of the probable point of entry."
Similarly, Lubrizol stated that "[t]idal influences on transportation of constituents of concern were not considered for the collection of background samples for the HSC and Patrick Bayou which were used in documenting an observed release in the calculation of the HRS score." Lubrizol stated that "[s]ince Patrick Bayou is tidally influenced, background samples SE-01, SE-02, SE-03, and SE-15/16 are not representative of background concentrations, cannot be used to document an observed release in the HRS scoring and cause the HRS score to be invalid." Lubrizol also quoted page 76 of the HRSGM as stating that:

> In tidal water bodies, background samples ideally should be collected beyond the farthest upstream point at which substances from the site might be transported by the tide...In some cases, a series of samples successively further upstream may be required. In tidally influenced areas, it is especially important to be aware of attribution problems that might be presented by non-site related sources of contamination either upstream or downstream from the PPE (probable point of entry).

Lubrizol claimed that, although "tidal fluctuations have been documented in Patrick Bayou and the HSC," these tidal influences "were not identified in the HRS Documentation Record [at proposal] ... and were not factored into the selection of locations for background samples." According to Lubrizol, "[s]ince tidal influences were not evaluated or considered, the background samples are not representative of the background concentrations for the constituents of concern." Lubrizol stated that the HRSGM "recommends the collection of successive samples in the upstream direction to account for tidal influences." According to Lubrizol, "[t]his was not performed for the Patrick Bayou site."

Lubrizol stated that:

- "[t]he HSC is located within an active industrial area and receives wastewater discharges from numerous industrial facilities that are located along the HSC."
- "on page 29 of the HRS Documentation Record [at proposal] ... and in the City of Houston study ... , some of the same constituents of concern in Patrick Bayou have been detected in the HSC and its other tributaries."
- "[d]uring high tide conditions, tidal waters flow from the HSC into Patrick Bayou."

Lubrizol stated that "[t]he contribution of constituents by tidal flow from the HSC into Patrick Bayou was not considered in the HRS Documentation Record [at proposal] because no background samples were collected below the confluence of the HSC and Patrick Bayou." According to Lubrizol, "[b]ackground samples SE-01, SE-02, and SE-03 from the HSC cannot be used to make this determination because these samples were collected upstream of the confluence of the HSC and Patrick Bayou."

Lubrizol concluded that:

> The calculation of the HRS score for Patrick Bayou was based on EPA's assertion of an observed release documented by comparison of analyses of background sediment samples with site sediment samples. However, as demonstrated above, tidal influences were not taken into account in obtaining the background samples. This caused the background samples to be unrepresentative of background concentrations, to invalidate their use to document an observed release, and thereby to invalidate the HRS score for the Patrick Bayou site.

In response to the commenters' assertion that EPA did not consider tidal influence, EPA disagrees. The section of the HRSGM cited by the commenters (page 76, section 5.2, Selecting Appropriate Background Samples, General Considerations, Surface Water Pathway, Tidal Areas) states that:

> In tidal water bodies, background samples ideally should be collected beyond the farthest upstream point at which substances from the site might be transported by the tide. If it is difficult to determine exactly how far upstream substances might be transported, it may be appropriate to collect background samples above the "head of the tide" (i.e., the most upstream point at which tidal cycles are present), as long as it isn't too far upstream to be unrepresentative of background.

This is exactly what was done at the Patrick Bayou site. Sediment samples SE-15/16 were collected upstream in Patrick Bayou; SE-10, SE-11, and SE-12 were collected upstream in the East Fork Tributary; and SE-01, SE-02, and SE-03 were collected in the HSC upstream of the confluence with Patrick Bayou. These samples were collected with the intent to find the farthest upstream point (in all directions) at which substances might be transported by the tide, in accordance with HRS guidance.

In addition, in response to Lubrizol's comment that background samples should have been collected downstream of Patrick Bayou to account for tidal influx of hazardous substances, EPA considered that scenario by evaluating the concentrations found in sediment release samples SE-07, SE-08, and SE-09, which were collected in the HSC below the mouth of Patrick Bayou. Even if these release samples were considered to be background samples for sediment samples SE-04, SE-05, and SE-06, collected from the confluence of Patrick Bayou and the HSC (to account for the possibility that hazard substances are being carried on the tide from downstream in the HSC toward Patrick Bayou), an observed release of chromium, copper, mercury, methylcyclohexane, toluene, ethylbenzene, xylenes (total), isopropylbenzene, Aroclor-1248, and Aroclor-1260 would still be established, according to the criteria in HRS section 2.3 (hazardous

substance concentrations at SE-04, SE-05, and SE-06 meet or exceed three times those at SE-07, SE-08, and SE-09). The site score would remain the same. This supports the attribution of these substances to the contaminated sediments in Patrick Bayou and not to the influx of contaminants from tidal influence. These substances include Aroclor-1248 and Aroclor-1260, which were used to calculate the waste characteristics score for each threat scored under the surface water migration pathway.

By comparing the concentrations of hazardous substances from the contaminated sediments in Patrick Bayou to the eight background samples collected from upstream in Patrick Bayou, East Fork Tributary, and the HSC, EPA evaluated the possibility that contamination could be entering the Bayou from an upstream source. However, based on the sampling results, including non-detect concentrations for the organic compounds found in the Bayou, EPA concluded that the contaminated sediment plume was limited to Patrick Bayou. The extent of the contaminated sediment plume will be evaluated further during the RI/FS. EPA also notes that whether or not the contamination is originating from tidally-influenced sources in the HSC is irrelevant to the HRS score. Potential sources have not been identified; the difficulty of doing so is one reason that the site is being considered a contaminated sediment plume of unknown origin.

3.1.3.1.3 Biased Background Samples

Occidental and Shell purported that "background sites were intentionally biased away from appropriate sites because those sites were known to be contaminated." Occidental and Shell claimed that "the SSI explicitly biased the background samples away from appropriate sites to inappropriate sites, because it was known that appropriate background sites were impacted, despite the fact that some impacts (absent those of point discharges) would be present as background conditions in all tributaries." Occidental and Shell stated that "[t]his overt bias – rejection of good background samples because they were known to be contaminated – renders the SSI sampling results invalid as an objective determinant to background conditions." According to Occidental and Shell, "[t]his biased selection of background sites is alone sufficient grounds for rejection of the background samples and the analyses (e.g., selection of COCs [contaminants of concern], evidence for a 'release', etc.) which rely on the background samples."

Occidental claimed that "[a]lternative and more appropriate background sampling locations are available." According to Occidental, "it is important to note that the SSIR authors recognized that better background sites existed." Specifically, Occidental stated that "[i]n terms of flow regime, sediment quality, and background loading from non-point sources and from the HSC itself, the other tributaries would likely have produced ideal background samples." Occidental claimed that these other tributaries more closely reflect the "true background of chemical concentrations at Patrick Bayou, which includes inflows from the HSC and from urban storm water." According to Occidental, these "ideal" background sampling locations were "rejected by the SSIR samples [sic] because these samples, reflecting the actual background for this site, were contaminated." Occidental quoted the Containment Assessment of Patrick Bayou [Reference 4 of the HRS documentation record at proposal], as stating that "all tributaries of the HSC were impacted and that tributaries other than the HSC were less impacted than Patrick Bayou." According to Occidental, this statement "clearly implies that the other tributaries would be suitable reference streams and thus more applicable background locations, having both the tidal influences, industrial stormwater runoff and atmospheric deposition that constitute background conditions for Patrick Bayou." In addition, Occidental asserted that:

> As noted in the Superfund Hazard Ranking System Training Course, '...background samples do not have to be clean or non detect. Sometimes...background samples show contamination..' ..., such as in urbanized areas. In fact, the course also states: 'If there is detectable concentration in the background, then the background level selected should account for variability in local conditions. This is necessary to avoid identifying normal variation in the identification of natural or anthropogenic background as observed releases...'

According to Occidental and Shell, "[a] more appropriate set of background samples might have resulted in an increased reference concentration, resulting in the conclusion that no observed release is present" which would "generate a score of 0 for an observed release, requiring the evaluation for a potential release."

Occidental and Shell stated that "the substances selected for assigning a value on Waste Characteristics may have changed, resulting in lower scores for that term, which was assigned at 320 for both threat calculations." Occidental and Shell stated that "[t]hese release and waste characteristic terms are highly influential in the calculation of the total score for both the Human and Environmental Threat portions of the Surface Water Overland Flood Migration Component, which was the portion of the HRS responsible for the total Site score and thus need careful and accurate assessment to result in a fair score for the site."

In response to the comment that there were more appropriate locations for background sample collection, EPA addressed this issue in the HRS documentation record at proposal. Page 29 of the HRS documentation record at proposal states that "[a]nother bayou was not selected for unaffected background sediment samples since previous studies conducted by the City of Houston within the HSC system indicated elevated toxic substances and water quality problems within all nine tributaries." Although background sediment samples collected from other tributaries may be beyond the influence of the contaminated sediment plume in Patrick Bayou, they may also be subject to contamination from other sources (as the commenters pointed out), including sources in the other tributaries, themselves. Therefore, the concentrations of hazardous substances in these other tributaries would not appropriately reflect background levels for the Patrick Bayou sediments. EPA selected background sampling locations in Patrick Bayou and the HSC, in close proximity to the Patrick Bayou sediment plume, in order to most accurately reflect background levels of hazardous substances for this site.

Therefore, Occidental and Shell's comments regarding background sample locations have no bearing on the value assigned for Likelihood of Release, and consequently, the Waste Characteristics factor value or the overall HRS site score.

3.1.3.2 Documentation of Wetlands

Lubrizol and Shell stated that "Patrick Bayou does not meet the criteria for listing on the NPL because it does not include any wetlands that are eligible for scoring as HRS wetlands." According to Occidental, "USEPA has inappropriately identified wetlands as a sensitive receptor for evaluation of Environmental Threat of the 'site'." Occidental, Lubrizol, and Shell noted that EPA identified two wetland areas in the HRS documentation record at proposal: The "Confluence Area," located north of the East Fork Tributary, and the "North Central Area," located near the OxyVinyls, LLP facility. [1-114, 2-8, 3-8, 4-106] Occidental, Lubrizol, and Shell claimed that "neither of these two areas is eligible for scoring as HRS

wetlands." Occidental stated that "[t]his inappropriate assignment of a sensitive target significantly affects the score derived for environmental threat in surface water overland flow pathway and thus the total score for the site." Lubrizol and Shell stated that "[w]ithout the inclusion of the wetland areas as sensitive environment targets in the HRS score, the Patrick Bayou site does not score above the minimum limit of 28.50 points and cannot be listed on the NPL."

Lubrizol and Shell cited page A-31 of the HRSGM as stating that "[i]f the targets score for wetlands is critical for National Priorities List (NPL) listings (i.e., the site would not score above 28.50 unless the wetlands areas are scored ..., there should be adequate documentation that the presumed wetlands meet the 40 CFR 230.3 definition of a wetland." Occidental quoted the HRS definition of "wetlands" from the HRSGM (40 CFR 230.3) as: "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." According to Occidental, Lubrizol and Shell, "[t]he locations and classifications of the wetland areas [identified in the HRS documentation record at proposal] are based on the National Wetlands Inventory (NWI) map for La Porte, Texas ... and a notation of 'wetlands vegetation' in field notes" which "does not provide adequate documentation to meet this requirement."

Occidental claimed that "EPA inappropriately relied on the FWI [sic] mapping for identification of HRS wetlands for scoring purposes, although the maps are not reliable enough or intended for such use." Occidental noted that "EPA recognizes that the NWI definition of wetlands are not congruent with those of 40 CFR 230.3." Occidental cited the HRS Training Course as stating that: "'<u>Wetlands</u> must meet the criteria stated in 40 CFR Section 230.3. This definition emphasizes vegetation types 'typically adapted for life in saturated soil types.' ... The EPA definition of wetlands is different from the definition used by the U.S. Fish and Wildlife Service and on the National Wetland Inventory (NWI) maps.'"

Occidental stated that "[t]he main difference between the NWI and the HRS definition is that the HRS definition stresses the presence of emergent wetlands as distinct from open water bodies." According to Occidental, "appropriate documentation of the presence of appropriate vegetation is of key importance." Occidental, Lubrizol, and Shell stated that "[t]he NWI map and brief written notes regarding 'wetlands vegetation' ... should not be used as the only sources for identifying eligible wetland areas since the wetland areas significantly impact the overall HRS Site Score." According to Occidental, Lubrizol, and Shell, "[t]he NWI maps should only be used as an **<u>initial</u>** source for the identification and classification of wetland areas" [emphasis added by Occidental, Lubrizol, and Shell]. Occidental, Lubrizol, and Shell cited page 332 of the HRSGM as stating that "the NWI maps can support reasonable estimates of the presence and boundaries of wetlands. However, wetlands identified on these maps may not meet the definition of a wetland as stated in 40 CFR 230.3 and may not be eligible for HRS scoring."

In addition, Occidental, Lubrizol, and Shell claimed that "[w]etland areas on the NWI maps may not be accurately identified and the wetland boundaries may not be accurate due to limitations associated with the preparation of these maps." Occidental, Lubrizol, and Shell stated that:

> According to the Special Note section of the La Porte, Texas NWI Map ... the NWI map 'was prepared primarily by stereoscopic analysis of high altitude aerial photographs...In addition, there is a margin of error that is inherent in the use of aerial photographs. Thus, a detailed on the ground and historical analysis of a single site may result in a revision of wetland boundaries established through photographic interpretation.'

Occidental, Lubrizol, and Shell stated that "[a] detailed, ground analysis was not documented for the two EPA-identified wetland areas to confirm the presence of eligible wetland areas and to determine the boundary locations and lengths for eligible wetland areas." In addition, Occidental, Lubrizol, and Shell cited page A-43 of the HRSGM as stating that "[i]f an even greater level of detail is required to verify the presence of a wetland and determine its length (or perimeter), a wetlands expert should be contacted." According to Occidental, Lubrizol and Shell, "EPA did not contact a wetlands expert to meet this EPA requirement," and "the Patrick Bayou site would not have been scored above the minimum limit of 28.5 points without the inclusion of the wetland areas as sensitive environment targets."

Occidental stated that "the inappropriate identification of wetland targets for the environmental threat analysis had a significant impact on the scoring of that component and consequently on the total score for the Patrick Bayou site." According to Occidental, Lubrizol, and Shell, "EPA did not provide adequate documentation as to the presence, type or length of the Confluence Area and the North Central Area nor to a wetlands determination and delineation (to demonstrate that the two EPA-identified wetland areas meet the EPA definition for HRS scoring as wetlands)." In addition, Occidental, Lubrizol, and Shell stated that "a wetlands expert was not contacted to provide the level of detail for this information required by the HRS Guidance Manual for sites such as Patrick Bayou." Occidental, Lubrizol, and Shell stated that "both wetland areas should be removed from the HRS Documentation Record and HRS score." Lubrizol and Shell further stated that "[a]ccordingly, the Patrick Bayou site would score less than 28.50 and would not be listed on the final NPL."

In response to the commenters' assertion that the presence and boundaries of target wetlands for the Patrick Bayou site have not been adequately documented by use of the NWI map and should have been field-verified, EPA disagrees. Page 332 of the HRSGM, section 8.16, states that (emphasis added):

> **For most wetland evaluations, NWI maps can support reasonable estimates of the presence and boundaries of wetlands.** However, wetlands identified on these maps may not meet the definition of a wetland as stated in 40 CFR 230.3 and may not be eligible for HRS scoring (see Appendix A). **When wetlands may significantly impact the site score (i.e., result in a site score greater than 28.50)**, further documentation **may** be needed to show that the wetlands meet the definition in 40 CFR 230.3 (documentation **may** include contacting a wetlands expert to delineate the wetlands).

Neither the HRS or the HRSGM state that field verification of wetlands is required to evaluate wetlands as HRS targets. However, the HRSGM does provide recommendations for documenting "sensitive environments that require professional judgement and/or specific expertise to identify and delineate," including wetlands. This wetlands discussion is found on pages A-29 through A-31 of the HRSGM. Page A-30 of the HRSGM states that:

> If the NWI, USGS, SCS, and/or state maps are out of date, verify the areas delineated as wetlands on maps (e.g., during site reconnaissance). For many wetland areas, a photograph will be sufficient documentation. Some eligible wetlands may not appear on any map. For areas not delineated as a wetland on maps to be eligible for HRS evaluation as a wetland, there should be adequate documentation (e.g., photographs, identification by a recognized wetlands expert) that the area meets the 40 CFR 230.3 definition.

The wetlands evaluated as targets in the HRS documentation record at proposal are identified as wetlands on the NWI map (Reference 16 of the HRS documentation record at proposal) and as "areas subject to

inundation" on the USGS topographic map (Reference 6 of the HRS documentation record at proposal). The USGS booklet, Topographic Map Symbols, includes areas subject to inundation under the category "submerged areas and bogs." There is no "wetlands" category described in this booklet. The NWI map relied upon in the HRS documentation record at proposal is dated 1999, which EPA does not consider to be "out of date." Furthermore, photographs of the wetland areas in Reference 10 of the HRS documentation record at proposal (photographs #17, 18, 23, 35, 37, 39, 40, 41, 42) depict emergent vegetation, which is a key factor in determining whether a wetland meets the 40 CFR 230.3 definition.

Further, field delineation of wetland boundaries is discretionary; suggested by the guidance for cases when it is needed to support the site score and NPL listing decision. For the Patrick Bayou site, however, this is not the case. At the Patrick Bayou site, the NWI map depicts 1.01 miles of wetlands frontage within the zone of Level II (actual) contamination. This wetlands frontage length is assigned a value of 50 points from HRS Table 4-24, resulting in the maximum environmental threat score of 60 points. (In fact, if the HRS environmental threat were not subject to a maximum cap of 60 points, the environmental threat score would have been 106.66 points). When combined with the human food chain threat score of 42.67, the surface water pathway score is 100 and the site score is 50. But even if the wetlands frontage depicted on the NWI maps was only "greater than 0.1 miles" subject to Level II contamination, a value of 25 points would be assigned from (the lowest tier of) HRS Table 4-24. At this target value, the environmental threat score would drop to 53 (from the maximum of 60). But, when combined with the human food chain threat score (42.67), the surface water pathway score would be 95.67 and the site score would be 47.83; still well above the 28.5 score required to list the site on the NPL. EPA acknowledges the accuracy limitations of NWI maps, in general, if the value is near a cut-off and great accuracy is needed. However, EPA documented 1.01 miles of frontage using an NWI map although the site scores above 28.5 with only 0.1 miles of wetland frontage. In other words, the wetland frontage depicted on the NWI is over ten times the frontage that would be necessary to obtain an HRS score above the 28.5 NPL cutoff value. Therefore, it is reasonable to conclude that the accuracy of the NWI maps is sufficient for HRS purposes. (As noted later in this support document, the wetlands area is reduced from 1.01 miles to 0.7 miles, but the conclusion reached here remains the same).

According to Occidental, Lubrizol, and Shell, "[a] wetlands area must have rooted emergent hydrophytic vegetation and may or may not have hydric soils in order to meet the HRS definition for wetlands." Occidental, Lubrizol and Shell cited the HRSGM as stating that "there are two types of wetlands that fall within the definition of HRS wetlands. Both types of wetlands require the presence of rooted emergent hydrophytes." Occidental, Lubrizol and Shell also cited the HRSGM as stating that "under the HRS definition, wetlands must, under normal circumstances, support a prevalence of rooted emergent hydrophytes."

According to Lubrizol and Shell, "[t]he Confluence Area and the North Central Area (if wetlands) are not eligible for scoring as HRS wetlands because they do not meet the EPA definition of wetlands under 40 CFR 230.3 ... since the HRS requirement for rooted emergent hydrophytes has not been met." Occidental, Lubrizol, and Shell stated that "[t]he presence of rooted emergent hydrophytic vegetation was not noted in the HRS Documentation Record [at proposal] for the North Central Area or the Confluence Area." According to Occidental, Lubrizol, and Shell, "the North Central Area was not specifically identified as a wetlands area in the notes and wetlands characteristics, such as hydric soils and hydrophytic vegetation, were not noted in the [EPA Screening Site Inspection Field Log Book Notes] or in the associated photographs." Occidental, Lubrizol, and Shell claimed that "[t]he only known reference to vegetation type in the record was in the EPA Screening Site Inspection Field Log Book notes ... where the vegetation type is identified as 'wetlands vegetation' for the Confluence Area." Lubrizol and Shell stated that "[s]pecific

types of 'wetlands vegetation' were not identified in the notes." According to Occidental, Lubrizol, and Shell, "'wetlands vegetation' is normally applied to a broader spectrum of vegetation of which rooted emergent hydrophytes are a subset." Occidental claimed that "[w]ithout supporting documentation, this vague statement is insufficient evidence of the proper vegetation type to meet the requirements of 40 CFR 230.3." Occidental, Lubrizol, and Shell stated that "[i]f an area does not meet the HRS definition of a wetlands, then the area is not a sensitive environment target and should not be used as the basis of the site score."

According to Lubrizol and Shell, "[t]he Confluence Area and the North Central Area (if wetlands) are not eligible for scoring as HRS wetlands because their correct classification is in a category that is ineligible for consideration as HRS wetlands." Lubrizol and Shell stated that:

> The correct classification of the EPA-identified wetland areas is important because only certain classifications of wetlands are eligible for scoring as sensitive environment targets. As noted in the HRS Guidance Manual (..., pgs. A-21 to A-23), the wetland classifications are separated into three categories for HRS scoring purposes: 1.) wetland classifications that are eligible as HRS wetlands; 2.) wetland classifications that are possibly eligible as HRS wetlands if the area meets the definition of wetlands in 40 CFR 230.3; and 3.) wetland classifications that are generally not eligible as HRS wetlands.

Lubrizol and Shell stated that according to the table found on page A-22 of the HRSGM, Patrick Bayou would be "correctly classified as an Intertidal Estuarine System with an Unconsolidated Shore." According to Lubrizol and Shell, this table states that this wetlands classification is only considered to be an HRS-eligible wetlands if emergent hydrophytes are present. Lubrizol and Shell claimed that "no emergent hydrophytes have been identified as being present." "Accordingly," Lubrizol and Shell concluded, "neither the Confluence Area nor the North Central Area are eligible as HRS wetlands." Lubrizol and Shell further stated that "[w]ithout the inclusion of these two wetland areas as sensitive environment targets in the HRS score, the Patrick Bayou site does not score above the minimum limit of 28.50 points and cannot be listed on the NPL."

In response to the commenters' claims that the wetland areas were incorrectly classified and are not HRS-eligible wetlands, EPA disagrees. According to the 1999 NWI map, the North Central Area of wetlands is classified as palustrine, emergent, persistent, seasonally flooded, excavated (PEM1Cx) wetlands and the Confluence Area of wetlands is classified as palustrine, unconsolidated shore, subtidal, excavated (PUSLx) wetlands. According to HRSGM Highlights A-8 and A-9, an emergent wetland "can be presumed to meet the 40 CFR 230.3 definition of a wetland" and a wetland categorized as unconsolidated shore "may meet the 40 CFR 230.3 definition of a wetland if emergent hydrophytes are present." Emergent vegetation is documented in the Confluence Area wetlands in photographs #35 through #42 of the SSI Field Log Book (Reference 10 of the HRS documentation record at proposal).

In response, the commenters have incorrectly cited the HRSGM as stating that "there are two types of wetlands that fall within the definition of HRS wetlands." In fact, HRSGM page A-20 (emphasis added) states that:

> USFWS describes five **categories** of wetlands. Two of these fall within the HRS definition of wetlands:

> • Areas with hydrophytes and hydric soils (e.g., marshes, swamps, and bogs); and
> • Areas where hydrophytes have become established but hydric soils have not yet developed (e.g., margins of impoundments or excavations).

Page A-21 of the HRSGM goes on to state, however, that:

> Three other categories do not meet the HRS definition of wetlands:
>
> > • Areas without hydrophytes but with hydric soils (e.g., flats where drastic fluctuation in water level, wave action, turbidity, or high concentration of salts may prevent the growth of hydrophytes);
> >
> > • Areas with hydrophytes but without soils (e.g., seaweed-covered portions of rocky shores); and
> >
> > • Areas without hydrophytes and soils (e.g., gravel beaches or rocky shores without vegetation).

The commenter provides no evidence that either of the two wetland areas identified at the Patrick Bayou site fall within one of these three categories of non-eligible wetlands. In fact, the photographs included in Reference 10 of the HRS documentation record at proposal visually portray the presence of emergent vegetation in the wetlands at the Patrick Bayou site, which precludes them from falling into any of the three categories of ineligible wetlands.

According to Occidental, "[t]he limitations of the NWI map is illustrated by the fact that the two 'wetland' areas in question were generally classified as palustrine in the HRS Documentation Record [at proposal] ... based on the La Porte, Texas NWI Map." Occidental, Lubrizol, and Shell stated that page A-21 of the HRSGM states that "palustrine systems are 'all non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses and lichens, and all such wetlands that occur in tidal areas where the salinity due to ocean derived salts is less than 0.5 ppt.'" Occidental claimed that "[a]lthough a palustrine system can also be present if it meets four exception criteria, none of these apply to Patrick Bayou." Occidental, Lubrizol, and Shell stated that because Patrick Bayou is tidally influenced and has a salinity that exceeds 0.5 ppt (parts per thousand), "the classification of palustrine for these two wetland alleged areas is incorrect." Lubrizol and Shell stated that tidal fluctuations have been documented in the HSC (citing the Texas A&M– Corpus Christi, Conrad Blucher Institute, Texas Coastal Observation Network). Occidental, Lubrizol, and Shell stated that tidal fluctuations have been observed in Patrick Bayou. In addition, Occidental, Lubrizol, and Shell stated that "according to two separate studies ... salinities within Patrick Bayou range from 0.4 ppt at the crossing of State Highway 225 (located one mile upstream of the Confluence Area) to 9.7 ppt at a sampling location between the Confluence Area and the North Central Area. Salinity values at the confluence with the Houston Ship Channel were documented at 3.8 and 9.3 ppt." Occidental, Lubrizol, and Shell concluded that neither of these two wetland areas can be classified as palustrine.

Lubrizol and Shell concluded that "the EPA-identified wetland areas are correctly classified as an estuarine [rather than palustrine] system according to [their interpretation of] the HRS Guidance Manual and the U.S. Fish and Wildlife document 'Classification of Wetlands and Deepwater Habitats of the United States.'" Occidental, Lubrizol, and Shell proposed that "[t]he discrepancy in classifications between the

NWI maps and the interpreted classification is attributed to the limitations associated with the interpretation of NWI maps and due to the well-documented subsidence within the Houston-Galveston area that has contributed to an influx of salt water into areas such as Patrick Bayou."

In response to the commenters' assertion that the USFWS has incorrectly classified the Patrick Bayou site wetlands as "palustrine" on the NWI map, and that the correct classification is "estuarine" [using the USFWS' Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al, 1987)], EPA does not agree. The commenters' assertion that the USFWS has erred relies solely on unsubstantiated salinity data. Although the commenters asserted that salinities in the TDL range from 3.8 to 9.7 ppt, they failed to note the salinity ranges at either of the target wetland areas.

Although the USFWS does consider salinity ranges in categorizing wetlands, as discussed in the HRSGM, it also specifically states that the salinity does not determine whether an area qualifies as a wetland for HRS purposes. The commenters neglected to mention that HRSGM page A-21 (emphasis added) states that "USFWS divides wetlands (and deepwater systems) into five categories based on salinity, tidal influence, and wave action. **Hydrophytes and hydric soils exist in each of these categories ... Note that salinity category does not affect whether or not an area qualifies as a wetland under either the HRS or the USFWS definition**." The five categories described by the USFWS are the marine system, the estuarine system, the riverine system, the lacustrine system, and the palustrine system.

The fact that "salinity category does not affect whether or not an area qualifies as a wetland under either the HRS or the USFWS definition" is further borne out in the portions of HRSGM Highlight A-8 that the commenter failed to mention. A review of this table clearly indicates that there is little difference between the estuarine system and the palustrine system, in terms of which wetlands are HRS-eligible:

- In the both the estuarine and palustrine system, emergent wetlands, scrub-shrub wetlands, and forested wetlands "can be presumed to meet the 40 CFR 230.3 definition of a wetland" when depicted on an NWI map. In the palustrine system, only, moss-lichen wetlands also fall into this category.

- In both the estuarine and palustrine system, rock bottom, aquatic bed, and reef habitats "generally will not meet the 40 CFR 230.3 definition of a wetland, except for some unique types of wetlands (e.g., some shoals or reefs)." In the estuarine system, only, unconsolidated bottom habitats also fall into this category.

- In both the estuarine and palustrine system, streambed, rocky shore, and unconsolidated habitats "may meet the 40 CFR 230.3 definition of a wetland if emergent hydrophytes are present." In the palustrine system, only, unconsolidated bottom habitats also fall into this category.

In conclusion, the determination of whether a wetland meets the 40 CFR 230.3 definition is dependent entirely on vegetation and not at all on salinity. This fact is clearly illustrated in HRSGM Highlight A-9, on page A-30, which describes the NWI wetlands that can be presumed to be HRS-eligible based on the vegetation and substrate descriptions used by FWS, without mention of salinity or the USFWS' five categories of wetlands. In the absence of evidence to the contrary, EPA prefers to rely on the USFWS' expertise in wetland classification, via the NWI maps, and discussed in EPA guidance, over that of the commenter.

Occidental added that "the general nature of the NWI maps as a resource is notable in that the North Central Area, is apparently a man-made surface impoundment that is isolated from Patrick Bayou and therefore not in contact with its sediments." According to Lubrizol and Shell, "[t]he North Central Area identified by EPA as a wetlands is not a wetlands at all." Lubrizol and Shell noted that page 94 of the HRS documentation record at proposal states that this area "begins near Station No. 4 below the OxyVinyls, LP Outfall No. 001 location in the north central portion of Patrick Bayou (see Figure 3 [of the HRS documentation record at proposal]), continues north along the east bank of the bayou to include sample location SE-22/MFHW86/FGW66 located along the east bank and returns to the segment origin." Lubrizol and Shell stated that "[t]he location of the North Central Area was compared to the NWI map for the La Porte, Texas and to a recent aerial photograph" and that, "[b]ased on the description of the North Central Area on page 94 of the HRS Documentation Record [at proposal], this area is not identified or classified as a wetlands area on the La Porte NWI map." Lubrizol and Shell further stated that "[t]here is a wetlands area on the NWI map that is identified and classified as PEM1Cx (palustrine emergent persistent seasonally flooded excavated), which is the same classification noted on page 94 of the HRS Documentation Record [at proposal]." According to Lubrizol and Shell, "[t]his area is located east of Patrick Bayou and appears to be separated from Patrick Bayou" and "[b]ased on a review of aerial photography for this area, this NWI-identified wetlands area is a surface impoundment of similar man-made structure that is isolated from Patrick Bayou." Occidental further suggested that "[a] more detailed assessment of potential targets would conclude that this body is therefore not an appropriate receptor."

Lubrizol and Shell cited page 331 of the HRSGM as stating that "wetlands should be identified by 'using readily available maps, brief written documentation (e.g., a statement that hydrophytic vegetation is present) or photographs.'" According to Lubrizol and Shell, "[e]vidence of wetlands at the North Central Area was not noted in the NWI map for the La Porte, Texas quadrangle, the written documentation or in the photographs that are associated with the North Central Area." Lubrizol and Shell asserted that "[t]his wetlands area should be removed from the HRS Documentation Record [at proposal]" and "[t]he HRS score is invalid because the North Central Area was included as a wetlands area.

In response to the commenters claim that a man-made surface impoundment is not an HRS-eligible wetland, page 331, section 8.16, and page A-20, section A.2 of the HRSGM specifically states that, "[a]s defined in 40 CFR 230.3 ... [w]etlands can be natural or man-made."

In response to the assertion that the North Central Area wetland is a surface impoundment separated from Patrick Bayou, EPA suspects that the commenters have misinterpreted the NWI map (Reference 16 of the HRS documentation record at proposal). The commenters stated that they determined that the North Central Area was a surface impoundment based on a comparison of the NWI map with an aerial photograph of the area. The commenters did not provide a copy of this aerial photograph to EPA. However, careful inspection of the 1982 USGS topographic map for the La Porte, Texas quadrangle, and the corresponding 1999 NWI map, reveals an area about 500 feet south of the North Central Area that does not appear to be contiguous with Patrick Bayou. This location, although identified as a wetland on the NWI map, is not included as part of the site, as shown on Figure 1b of the HRS documentation record at proposal, and was not evaluated as a target for the environmental threat. This "surface impoundment" is not visible in any of the photographs taken during the SSI. In the case of Patrick Bayou, the North Central Area is located approximately 500 feet north of the area which appears to be the surface impoundment discussed in the comment letters.

Nonetheless, upon further review of photographs of the site, EPA has determined that it is unclear whether the North Central wetland area is contiguous to perennial waters along the surface water migration pathway. The photographs were taken during low tide indicating the main channel flow; however, it is

unclear whether perennial waters enter the identified north central wetland area. EPA has correctly identified that the North Central Area is not associated with the surface impoundment area. After significant review, EPA has decided that during site reconnaissance it was not sufficiently documented whether the North Central Area wetland area is contiguous to perennial Patrick Bayou. Based on this uncertainty, EPA will remove this area as a target. As stated previously, this will not have a significant impact of the site score. Even without the North Central Area wetlands, there remains 0.70 miles of wetlands frontage at the Patrick Bayou site which results in a wetlands frontage value of 25, and a environmental threat of 53.33 (instead of 60) and an overall HRS score of 47.83 (instead of 50.00). This change will be reflected in the final HRS documentation record. The HRS score remains over 28.50.

3.1.3.3 Other Regulatory Programs

Shell stated that "Patrick Bayou should not be listed on the NPL because a current study assessing Bayou sediments under the Total Maximum Daily Load (TDML) program with EPA Region VI and the Texas Natural Resource Conservation Commission (TNRCC) is assessing sources and ecological effects." Shell proposed that further regulatory action on Patrick Bayou is "not necessary" until the study is completed.

Shell stated that:

> The Patrick Bayou TDML project for listing segment 1006A of the Houston Ship Channel is progressing through a multi-year field sampling program where the Clean Water Act 303(d) listed parameters are being studied. One of the listed parameters is sediment toxicity. The TDML study is assessing the sediment chemistry, sediment toxicity, and sediment benthic biological populations in 19 separate sample stations over two distinct time periods of the study, and a special August 2001 sampling for key stations. The data is being evaluated to determine if the sediment chemicals measured are resulting from present or past introductions into Patrick Bayou.

Shell added that

- "[t]he benthic community analysis demonstrates a community not unlike other bayous of similar physical configuration with industrial inputs from permitted wastewater discharges."
- "[t]he TMDL study is in the process of assessing the causes of sediment toxicity and the contributions of that toxicity to alteration of the benthic communities of Patrick Bayou."
- "[t]he sediment TIE investigations have shown that the sediment toxicity cannot be moved off of the sediment into the pore water by standard practices." According to Shell, "[t]his indicates that those toxicants present are not in equilibrium with the water column and are not released from the Patrick Bayou into the surrounding receiving water and into Houston ship Channel [sic] and Galveston Bay system."
- "[t]he sediment is toxic to standard test organisms, amphipods and worms but the benthic community inhabiting Patrick Bayou is typical of industrialized and urbanized bayous of the area. This would indicate that the local communities are tolerant or adapted to these conditions."

Shell concluded that Patrick Bayou is "not unique from other bayous in industrialized and urbanized areas in Houston and is therefore not unique to be considered on the NPL notice," and asserted that "[i]t is premature to list the bayou on the superfund listing in advance of completion of the TMDL assessment for sediment toxicity, causes of toxicity, and resolution of the sources, being present or historical."

According to Lubrizol, Patrick Bayou was placed on the Clean Water Act Section 303(d) list in December 1999 and "[i]n order to address the Section 303 (d) listing, industries along the bayou voluntarily formed an industry consortium and requested approval from the Texas Natural Resource Conservation Commission (TNRCC) to become the Lead Organization." Lubrizol further stated that "TNRCC approved this request and the Lead Organization began a Total Maximum Daily Load (TMDL) study of Patrick Bayou in 2000" and that Lubrizol "is an active and voluntary member of the Lead Organization and is currently participating in the ongoing TMDL study." According to Lubrizol, this "TMDL study is scheduled for submittal to the TNRCC in 2002." Lubrizol, stated that it "is committed to the continued improvement of water quality in Patrick Bayou" and that it "strongly believes that this goal will be most effectively met by allowing the Lead Organization to collectively and cooperatively address Patrick Bayou sediments under Section 303 (d) site of the Clean Water Act and not as a National Priorities List site under the Comprehensive Environmental Response, Compensation and Liability Act."

In response, the NPL listing process will not preclude the completion of the TMDL study. Nor does the ongoing TMDL study have any bearing on EPA's decision to list the Patrick Bayou site on the NPL. EPA appreciates the information provided by Shell and Lubrizol regarding the TMDL study in Patrick Bayou. The study results will be considered during the RI/FS and remedy selection phases of the Superfund cleanup. The goal of the TMDL program is to establish pollution control limits for waters not meeting water quality standards, not dealing with the current sediment contamination. CERCLA was established to respond to releases or threatened releases of hazardous substances that may endanger public health or the environment. Addressing Patrick Bayou through CERCLA regulations will ensure that the release of hazardous substances already in the Bayou sediments will be evaluated and addressed.

The HRS is not a risk assessment; rather it is a screening tool for identifying sites that pose sufficient risk to warrant further investigation. The purpose of the NPL is to list sites among those with "known or threatened releases." Whether a site is involved in an environmental regulatory program or action, such as the TMDL program, does not exclude it from consideration for placement on the NPL. Although, by policy, EPA considers deferral to RCRA, EPA has no policy related to TMDL authorities. Nor will EPA adopt such a policy since TMDL authorities cannot address the contamination. This site was evaluated using the HRS process, and sufficient documentation indicates that this site warrants further investigation whether other Agency programs have similar concerns is not relevant to NPL listing.

In response to the commenter's request that EPA postpone listing until the completion of the TMDL study, EPA cites the court decision of *Eagle-Picher Industries, Inc. v. USEPA, US Court of Appeals, 1985*: "[n]othing in the language of the statute explicitly speaks to the question whether the standards for listing a site on the NPL and for taking response action must be identical ... The Senate Report recognized that the NPL would have to be "based on information immediately available" to the EPA, and went on to observe that:

> the priority lists serve primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial action. Inclusion of a facility or site on the list does not in itself reflect a judgement of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person.

The court also recognized that "the EPA's decision to reconcile the need for certainty before action with the need for inexpensive, expeditious procedures to identify potentially hazardous sites by establishing different threshold criteria for action and for listing is reasonable and fully in accord with congressional

intent." Therefore, EPA is not required to wait for the results of the TMDL project before listing a site of the NPL. Listing the site on the NPL will ensure that human health and the environment will be protected.

In response to Shell's request to defer this site to the State (TNRCC), on May 3, 1995, EPA issued its "Guidance on Deferral of NPL Listing Determinations While States Oversee Response Actions." EPA developed the guidance in an effort to enhance the State role in addressing sites. The deferral program is an administrative tool to enable States and Tribes, under their own laws, to respond at sites that EPA would otherwise not soon address.

In the case of the Patrick Bayou site, EPA has decided that deferral to the State of Texas is not appropriate because TNRCC and the State of Texas have already attempted to address this site and support the listing of the Patrick Bayou site on the NPL. In fact, TNRCC prepared the HRS documentation record which provides the rationale behind the HRS score. Hence, deferral to the TMDL study administered by TNRCC and the Region is not appropriate.

Similarly, EPA will not defer this site to the Lead Organization of the TMDL study. The organization does not have the ability of EPA or state programs to address the contamination. Further, EPA attempts to work cooperatively with States, and in this case, the State supports listing the site on the NPL.

In conclusion, an observed release has been documented at the Patrick Bayou site. Sampling of Patrick Bayou, East Fork Tributary, and the HSC revealed elevated levels of cadmium, chromium, copper, lead, manganese, mercury, nickel, vanadium, zinc, cyanide, cyclohexane, benzene, methylcyclohexane, toluene, chlorobenzene, ethylbenzene, xylenes, isopropylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, hexachlorobutadiene, 2-methylnaphthalene, hexachlorobenzene, endosulfan I, Aroclor-1248, Aroclor-1260 (See Table 6 of the HRS documentation record at proposal). These substances meet the criteria for observed release by chemical analysis, as defined in section 2.3 of the HRS. These contaminants threaten the downstream fishery in the HSC and wetlands located in Patrick Bayou. Based on the observed release, waste characteristics, and targets documented in the HRS documentation record at proposal, the HRS site score is 47.83, well above the 28.50 cutoff for NPL listing.

3.1.3.4 Error in the HRS Documentation Record at Proposal

Lubrizol noted that "La Porte was incorrectly spelled as La Port on page 94 of the HRS Documentation Record [at proposal], the correct spelling is 'La Porte.'"

In response, EPA agrees that La Porte was misspelled on page 94 of the HRS documentation record at proposal. This comment has no bearing on any scoring factor or the HRS site score. EPA has revised the error in the final HRS documentation record.

3.1.4 Conclusion

The original score for the Patrick Bayou site was 50.00. During the review of the site file, EPA made a conservative decision to remove one area of wetlands from the wetlands frontage calculation because it is unclear whether or not this wetlands area is contiguous to perennial waters. Therefore, the final score for the Patrick Bayou site is:

Surface Water	95.67
Ground Water	Not Scored
Soil Exposure	Not Scored
Air Pathway	Not Scored
HRS Site Score	47.83

Region 8

4.1 EUREKA MILLS, EUREKA, UTAH

4.1.1 List of Commenters and Correspondents

NPL-U36-5-9-R8	Correspondence dated April 27, 2001 from The Honorable Michael O. Leavitt, Governor of Utah
NPL-U36-3-9-1-R8	Comment dated August 13, 2001 from Bret F. Randall of LeBoeuf, Lamb, Greene & MacRae, L.L.P. representing Chief Consolidated Mining Company

4.1.2 Site Description

The Eureka Mills site is located in the town of Eureka, Utah, approximately 60 miles south of Salt Lake City and 12 miles west of Utah Lake. Eureka is one of several towns in the Tintic Mining District, which was organized in the spring of 1870. A total of 14 mills may have been operated in the Tintic District. These mills concentrated ores to make them more profitable for shipping. However, none was very successful or operated for any substantial length of time.

The HRS score for this site is based on the scoring of the Soil Exposure Pathway. The site is composed of one source - an area of contaminated soil. The Utah Department of Environmental Quality (UDEQ), in conjunction with the U.S. Environmental Protection Agency (EPA), collected 22 soil samples from the Eureka area in 2000. Soil samples were collected from residential areas, from the Tintic High School and Eureka Elementary Schools, and from areas adjacent to mill sites. These samples were analyzed for total metals and indicated the presence of arsenic and lead concentrations as great as 1,030 milligrams per kilogram (mg/kg) and 29,300 mg/kg, respectively.

The documentation of these concentrations prompted EPA to begin a Removal Evaluation in August 2000. It included the collection of 4,205 surface soil samples, which were analyzed on site using X-Ray Fluorescence (XRF). Of these 4,205 samples, 394 were sent to an EPA contract laboratory for confirmational analysis. Of these 394 confirmation samples, 225 were discrete depth samples taken from between 0 and 18 inches below ground surface (bgs). All confirmation samples verified the presence of arsenic and lead in surface soils up to 2,100 mg/kg and 37,000 J mg/kg, respectively.

Two site-specific background samples were used for comparison with these samples. These samples were selected due to their location outside of the apparent area of contaminant deposition and proximity to the Eureka Mills site. Between these two samples, the highest background concentrations for arsenic (14.7 ppm) and for lead (198 ppm) were selected to compare with contaminated samples. Those results that were significantly above the background levels were used to delineate an area of more than 6 million square feet of surficial arsenic and lead soil contamination.

Although there were many samples that documented contamination significantly above background, only those samples with the highest recorded concentrations were used to delineate the area of contamination (AOC). Property boundaries, sample locations, and the estimated boundaries of the AOC were mapped

using geographic information system (GIS) mapping software. In this manner, the total area covered by pavement was easily determined and subtracted from the total area of the AOC.

There are several mills and waste piles in the vicinity of the town of Eureka. Contamination was transported from the mills and waste piles to the town through various methods. Historical flooding has occurred, which may have transported mine and mill wastes downgradient toward and through the town. Human actions have also probably served to spread contamination around the town of Eureka. For example, in 1900, tailings ponds overflowed and flooded Eureka Gulch. Wastes from one milling process were allowed to flow downhill and into Eureka Gulch. The use of material from waste piles as fill around the town appears to have been widespread. Horse teams and wagons hauled most of the district's ore in its early days. It is likely that some primary ore carried in this manner was inadvertently lost during transportation. Aerial deposition from blowing dust is also a potential mode of contaminant transport. In addition, many residential developments and schools are located in close vicinity to waste piles and mill sites.

An evaluation based only on the confirmation sample results from within the area of observed soil contamination indicates there are approximately 90 residences, as well as two schools, located in the area of contamination that are subject to contamination above EPA benchmarks.

4.1.3 Summary of Comments/Correspondence

Governor Michael O. Leavitt wrote in support of including this site on the National Priorities List (NPL). He also passed along some concerns expressed by local residents and community leaders in Eureka, including health concerns. These local citizens and community leaders insist that health threats be mitigated as quickly as possible with as little disruption to the community as possible. They also ask for some assurances from EPA that the city will not be financially liable for any of the costs of cleanup, as the city does not have the resources to support any aspect of this project. They express concern about the economic impact of the project on local mining companies. Lastly, community leaders request that EPA provide financial assistance to the community to retain qualified technical representation.

Bret F. Randall of LeBoeuf, Lamb, Greene & MacRae, L.L.P., representing Chief Consolidated Mining Company (Chief), commented that the site name, Eureka Mills, is inaccurate and misleading. Chief commented that the overwhelming threat to Eureka is from mining waste rock rather than milling wastes called tailings; therefore, Chief asserts that the name "Eureka Mines" would more accurately reflect site conditions and history. Chief commented that Eureka Gulch is not an intermittent stream but an ephemeral stream. Chief noted that the statement in the HRS documentation record that refers to the use of tailings as fill material is inaccurate because mine waste rock, not tailings, was used as fill material. Chief objected to the association of the Site with the Tintic Mining District because the Site appears to be limited to Eureka and adjacent mine sites. Chief noted that the Eureka drainage basin is a small, easily defined component of the larger Tintic Mining District, which conducted limited milling and no smelting. Chief pointed out that the HRS documentation record suggests that the Utah Mineral Concentrating Company was owned by the Chief Consolidated Mining Company; however, the reference provided does not support this suggestion. Chief commented that the arsenic background levels are inappropriate because only two samples were used for comparison and because these were not collected from the site area. Chief commented that the lead background levels were inappropriate because, again, only two samples were used for comparison and also because the lead background value did not meet quality

control criteria. Finally, Chief commented that it appears that the students of Eureka were double counted – once as students and once as residents – thus, over-estimating the Resident Population.

4.1.3.1 Support for Listing

Utah Governor Michael O. Leavitt concurred with EPA's decision to list Eureka Mills. In addition, he passed along some concerns of the local residents and community leaders. These include concerns about the health of the citizens. They assert that "EPA needs to ensure that all of the health threats are thoroughly mitigated as quickly as possible with as little disruption to the community as possible." They also wished to have some assurances from EPA that the city will not be financially liable for any of the costs of cleanup. They assert that "[t]he city does not have resources available to support any aspect of this project." Local residents and community leaders also expressed concern about the economic impact of the project on the local mining companies. They wish to ensure that mining is still a viable business after completion of the project. Additionally, community leaders state that they are unfamiliar with the Superfund program and request financial assistance from EPA to retain a qualified technical representative for advice.

In response, EPA has added Eureka Mills to the NPL. Listing makes a site eligible for remedial action funding under CERCLA, and EPA will examine the site to determine what response, if any, is appropriate. Actual funding may not necessarily be undertaken in the precise order of HRS scores, however, and upon more detailed investigation may not be necessary at all in some cases. EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account the NPL ranking, State priorities, further site investigation, other response alternatives, and other factors as appropriate. EPA will not stop work at some sites to begin work at other higher-scoring sites added to the NPL more recently.

Regarding cleanup cost, EPA does not assign liability when it lists a site. The NPL serves as an informational tool for use by EPA in identifying those sites that appear to present a significant risk to public health or the environment. The NPL does not cause EPA necessarily to undertake remedial action, or that any action is required by, nor liability for site response costs assigned to, a private party. This position, stated in the legislative history of CERCLA, has been explained more fully in the Federal Register (48 FR 40759, September 8, 1983 and 65 FR 5468, February 4, 2000). See Kent County V. EPA, 963 F.2d 391 (D.C. Cir. 1992).

Regarding the request for financial assistance, Congress established the Technical Assistance Grant (TAG) Program in 1986 to help communities affected by Superfund sites understand and comment on site-related information, and, thus, participate more effectively in cleanup decisions. Eligible groups are usually those groups or individuals who live near the site and whose health, economic well-being or enjoyment of the environment are directly threatened. If a group is awarded a TAG, funds may be used to hire a technical advisor to:

- Review site-related documents;
- Meet with the group to explain technical information;
- Provide assistance in communicating group concerns about the site;
- Interpret technical information for the community; and
- Participate in site visits, when possible, to gain a better understanding of site cleanup activities.

(See www.epa.gov/region08/community_resources/grants/granttag/granttag.html accessed on 12/06/2001, last modified on 05/29/2001.)

The Region 8 EPA office in Denver serves individuals and communities in Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. For more information, contact Linda Armer, EPA's Assistant to the TAG Coordinator for Region 8, at 1-800-227-8917 extension 6696. Written correspondence can be sent to US EPA, Region 8 (EPR-PS), 999 18th Street, Suite 500, Denver, CO 80202-2466.

4.1.3.2 Site Name

Chief commented that the site name, Eureka Mills, is "inaccurate and misleading." It asserted that although extensive mining did occur in the Eureka area, milling was never successful, and in addition, it stated that the volume of mine waste rock in and around Eureka exceeds the volume of tailings by "orders of magnitude." Thus, it asserted that the name Eureka Mills leaves the impression that extensive milling wastes are present in Eureka. It is Chief's belief that mill tailings are generally seen as presenting more environmental threats than mine waste rock; therefore, the name "Eureka Mines" would more accurately reflect site conditions and history.

In response, EPA sees no reason for changing the site name. EPA prefers names that accurately reflect the location or nature of the problems at a site and that are readily and easily associated with a site by the general public. Although mill operations, individually, were not very successful, collectively, there were mills operating in the Eureka area on and off for approximately 30 years (see p. 29 of the HRS documentation record as proposed). Mill tailing piles and mine waste piles are both prevalent and contributing to contamination in and around Eureka (see p. 29 of the HRS documentation record as proposed). EPA is particularly concerned about the effect of mill tailings in the area because of the close vicinity of homes and schools to the mill sites and tailing piles. All of the mill and mine sites described in the site inspection (SI), were, at the time of the report, not fenced and open to public access. Evidence indicates that the piles, in particular at the Chief Mill, are frequented by all terrain vehicle enthusiasts. Tintic High School and Eureka Elementary School are located either adjacent or in close proximity to mill sites. Historic documentation collected during the SI found that it is likely residents have built homes upon contaminants from Eureka Hill Mill that were deposited during the 1900 tailing pond flood. In addition, sampling in the area supports information, provided by residents, that mill tailings were permitted to flow from the Chief Mill and be confined in the general area of 136 East Main Street. According to the SI, tailings at the Chief Mill have the potential to affect the largest number of residents, because homes have been built and continue to be built within 200 feet of the mill site, in particular, downgradient. Furthermore, a long-time resident of Eureka indicated that he dug through 18 inches of tailing in his backyard to plant a tree (see pages 16-18 of *Site Inspection of the Eureka Mills*, Reference 6 of the HRS documentation record as proposed). This documentation, in addition to chemical sampling collected in the area, has led EPA to believe that mill tailings are of particular concern at this site. Therefore, EPA believes the site's present name reflects the primary source(s) of the problem at the site.

The purpose of the NPL is to serve primarily as an informational tool for use by EPA in identifying those sites that appear to present a significant risk to public health or the environment. The naming of the site does not reflect a judgment of the activities of the owner or operator of a site. It does not require those persons to undertake any action, nor does it assign liability to any other person.

4.1.3.3 Site Summary

Chief commented that the HRS documentation record as proposed refers to the use of tailings as fill material. It stated, however, that this is inaccurate because mine waste rocks, not tailings, were used as fill material. It asserted that tailings are not suitable fill for construction purposes because tailings will not compact. Chief requested that the HRS documentation record be changed to read, "Mine waste rock was generally used as fill material in various locations through out Eureka."

In response to Chief's assertion that mill tailings were not used as fill material around the town of Eureka, EPA's support for this statement is in the site summary section of the HRS documentation record as proposed. It states, "[T]he use of tailings as fill material around the town appears to have been widespread" (see p. 7 of the HRS documentation record as proposed). EPA does have documentation that at least one "longtime resident dug through 18 inches of tailings, derived from the Chief Mill, in order to plant trees in his backyard" (see McNulty, J., 1999, Tintic Historical Society, Personal Conversation, 12/13/1999 cited on p. 18 of *Site Inspection of the Eureka Mills*, Reference 6 of the HRS documentation record as proposed). The rest of the references for this statement mention the use of fill material in more general terms such as ". . . yard was likely leveled with fill material hauled in from the Gemini Mine . . . the use of gangue material in the leveling of yards . . ." (see pages 14 and 15 of *Site Inspection of the Eureka Mills*, Reference 6 of the HRS documentation record as proposed).

Therefore, in the final HRS documentation record, EPA has changed the following sentence, "The use of tailings as fill material around the town appears to have been widespread" (see p. 7 of the HRS documentation record as proposed). The new sentence states, "The use of mine and mill waste material as fill around the town appears to have been widespread." In the site summary and description of source one, this information was used to provide the reader an understanding of the conditions at the site and the characterization of the source. In addition, this sentence does not affect any HRS factor value used in scoring.

4.1.3.4 Mill Ownership

Chief commented that on page 29, third paragraph of the HRS documentation record as proposed, the suggestion is made that the Chief Consolidated Mining Company owned the Utah Mineral Concentrating Company. However, it pointed out that the reference provided in the HRS package to support this statement only documents when the mill was closed and not the ownership. Chief requested that EPA either provide the proper reference or change the paragraph to accurately reflect ownership.

In response, the suggestion in the HRS documentation record as proposed that Chief Consolidated Mining Company owned the Utah Mineral Concentrating Company states:

> Only four significant mills have been identified in the immediate area surrounding Eureka. These four locations are the Bullion Beck Mill, Eureka Hill Mill, Chief Consolidated (two separate mills), and the mills at May Day, Godiva, and Uncle Sam, which are three collocated mills that are treated as one mill in the SI Work Plan . . . .The Chief Consolidated mill[s] consists of a few historic mills constructed around the Chief mine. The Utah Mineral Concentrating Company built an experimental mill east of the Chief No. 1 shaft in 1914. This mill had a capacity of 100 tons of ore a day and closed in 1916.

Reference 7 of the HRS documentation record as proposed indicates that the mill built by Utah Mineral Concentrating Company was used to process ore from the Chief mine (see p. 406 of *Ore Deposits of Utah*, Reference 7 of the HRS documentation record as proposed). This relationship is the reason why the Utah Mineral Concentrating Company mill has been considered together with the Chief floatation mill in the HRS documentation record as the "Chief Consolidated mill" (see page 29 of the HRS documentation record as proposed).

After reviewing the statements in the HRS documentation record as proposed, and the supporting references, EPA agrees that these statements could lead to some confusion. The wording on page 29 of the HRS documentation record as proposed has been revised for clarity. The new sentences now state:

> Only four significant mill areas have been identified in the immediate area surrounding Eureka. These four locations are the Bullion Beck Mill; Eureka Hill Mill; the Utah Mineral Concentrating Company experimental mill and the Chief floatation mill; and the May Day, Godiva, and Uncle Sam, which are three small collocated mills that are treated as one mill on the SI Work Plan. . . . There were a few historic mills constructed around the Chief mine. The Utah Mineral Concentrating Company built an experimental mill east of the Chief No. 1 shaft in 1914. This mill processed low-grade ores from various parts of the Tintic district, and especially from the Chief mine. This mill had a capacity of 100 tons of ore a day and closed in 1916.

These changes can be found in the HRS documentation record at promulgation. The comment and these changes have no impact on the site score.

4.1.3.5 Site Definition

Chief commented that Section 2.1 and other sections of the HRS documentation record as proposed referred to milling and smelting practices in the Tintic Mining District. It commented that the Tintic Mining District refers to a very large area, including many mine areas, mills, and smelters that were located many miles away from Eureka; therefore, Chief seriously questioned the relevance of milling and smelting practices in the Tintic Mining District to Eureka. Chief commented that the Eureka drainage basin is a small, easily defined component of the larger Tintic Mining Area. It asserted that since the "Site" appears to be limited to the town and nearby mine sites, it would be more appropriate for site discussions to focus on the mining practices and waste within the Eureka drainage basin. Chief reasserted that within Eureka, mine wastes appear to be the major sources of contamination; limited milling and no smelting were conducted in Eureka.

In response, the site is not necessarily limited to those areas presently included in the HRS evaluation. The areas of contamination, sources, and pathways evaluated in the HRS score of the site are not reflective of any determination of site boundaries. Placing a site on the NPL is based on an evaluation, in accordance with the HRS, of a release, threatened release, or, in the case of this site, an area of hazardous substances, pollutants, or contamination. However, the fact that EPA initially identifies and lists the release based on a review of contamination at a certain parcel of property does not necessarily mean that the site boundaries are limited to that parcel.

Site definition is discussed in Section F of the Preamble to the proposal to add the Eureka Mills site to the NPL (66 FR 32289, June 14, 2001). The Preamble states:

> When a site is listed, the approach generally used to describe the relevant release(s) is to delineate a geographical area (usually the area within an installation or plant boundaries) and identify the site by reference to the area. As a legal matter, the site is not coextensive with that area, and the boundaries of the installation or plant are not 'boundaries' of the site. Rather, the site consists of all contaminated areas within the area used to identify the site, as well as any other location to which contamination from that area has come to be located, or from which the contamination came.

CERCLA Section 105(a)(8)(A) requires that EPA list national priorities among known "releases or threatened releases" of hazardous substances; thus, the emphasis is on the release/AOC rather than on precisely delineated boundaries. The term "facility" is defined in Section 101 of CERCLA (Definitions) as "any site or area where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located."

In Section 1.1 of the HRS, *Definitions*, EPA elaborates on the "come to be located" language, defining "site" as "area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located."

Until the investigation in process has been completed and a remedial action (if any) selected, EPA generally does not attempt to estimate the full extent of the contamination at the site, or describe the ultimate dimensions of the NPL site. Even during or following a remedial action (e.g., removal of contaminated soil), EPA may find that the contamination has spread farther than or not as far as previously estimated.

As discussed in the HRS documentation record as proposed, page 8, this site is being listed based on the scoring of one source of contaminated soil. Based on 247 discrete depth samples, soil samples taken from 0 to 18 inches below ground surface, a 6,608,997.26 ft^2 area of observed contamination was delineated (see *GIS Map*, Reference 16; pages 11-30 of the HRS documentation record as proposed).

Regarding Chief's comments that references to the Tintic Mining District in the HRS documentation record are irrelevant to the Eureka Mills site, while this fact is not relevant to the HRS evaluation of the site, this information is relevant for a broader understanding of the factors that have contributed to contamination at the site. "In the past, EPA viewed the NPL as a list compiled for the purpose of informing the public of the most serious hazardous waste sites in the nation . . ." (see the *National Oil and Hazardous Substances Pollution Contingency Plan*, 53 FR 51415, December 21, 1988). In addition, in an attempt to make HRS documentation records comprehensible to the public, the Agency generally provides the reader with both general information regarding the site and the historical and physical setting of the site. As Eureka is a part of the historical Tintic Mining District, EPA considers this information important for an understanding of historical contributions of contamination at the site.

4.1.3.6 Surface Water Body Classification

Chief commented that Eureka Gulch is not an intermittent stream, but that it is an ephemeral stream. It went on to define an intermittent stream as one that "flows for a definitive time period (e.g., 30-60 days) after precipitation events have occurred," and an ephemeral stream was defined as a stream that "only flow[s] in response to precipitation." Chief considered the proper classification important when considering reclamation options and flood control issues.

In response, for HRS purposes, EPA has properly classified Eureka Gulch as an intermittent stream. The HRS classifies surface water into four categories: rivers, lakes, oceans, and coastal tidal waters (see HRS, Section 4.0.2, *Surface water categories*).

> Rivers include:
> - Perennially flowing waters from point of origin to the ocean or to coastal tidal waters, whichever comes first, and wetlands contiguous to these flowing waters.
> - Aboveground portions of disappearing rivers.
> - Man-made ditches only insofar as they perennially flow into other surface water.
> - Intermittently flowing waters and contiguous intermittently flowing ditches only in arid or semiarid areas with less than 20 inches of mean annual precipitation.

The HRS makes a distinction only between perennial streams and intermittent streams. It does not subdivide intermittent streams further. An intermittent stream is defined as a stream that "come[s] and go[es] at intervals," and an ephemeral stream is defined as "a stream that flows only briefly during and following a period of rainfall in the immediate locality" (see pages 761 and 1180 of *Webster's Third New International Dictionary of the English Language - Unabridged*. Merriam-Webster Inc., Publishers, Springfield, Massachusetts. 1986). As indicated above, ephemeral streams are a type of intermittent stream and are not specifically part of the surface water body classifications for HRS scoring purposes; however, during the remedial investigation/feasibility study stage, the further classification of this stream could be assessed with more detailed information, especially in relation to the risk posed by contaminant transport via streamflow.

It should be noted that this comment does not affect the site score because the surface water pathway was not used to calculate the HRS score for this site. Eureka Gulch is mentioned only in the section called Pathways, Components, or Threats Not Scored on the cover page to the HRS documentation record as proposed.

4.1.3.7 Soil Exposure Waste Quantity

Chief commented that the area of contamination (AOC) hazardous waste quantity has been over-estimated. Chief went on to explain that the AOC was determined by connecting the dots around the perimeter using samples that met the observed contamination criteria. It stated that "EPA assumes that all of the area within the connected dots, excluding areas covered in asphalt, exhibit the same elevated arsenic concentration." Chief asserted that because this assumption greatly over-estimates the AOC, EPA should provide a sound scientific method for estimating arsenic concentrations within the perimeter.

In response, EPA has appropriately determined the area of contamination (AOC). The HRS states:

> [e]stablish areas of observed contamination based on sampling locations at which there is observed contamination as follows . . .[f]or contaminated soil, consider both the sampling location(s) with observed contamination from the site and *the area lying between such locations* [emphasis added] to be an area of observed contamination, unless available information indicates otherwise (see HRS Section 5.01, *General considerations*).

As is stated above, the HRS directs EPA to include the area lying between sampling location at which there is observed contamination as part of the AOC unless available information indicates otherwise.

To emphasize that this entire area should be considered part of the AOC, EPA notes that samples meeting the observed release criteria have been documented throughout the AOC. A total of 247 discrete depth soil samples were sent for laboratory confirmation (225 sent by the Bureau of Reclamation (BOR) and 22 sent by UDEQ). These samples were collected at three discrete depth intervals, 0-6 inches bgs, 6-12 inches bgs, and 12-18 inches bgs. Only the samples with the highest recorded concentrations from individual properties were used to delineate the AOC. This resulted in the use of 162 samples that met the criteria for observed contamination for either arsenic or lead to delineate the AOC (see p. 11 of the HRS documentation record as proposed; HRS Section 5.01, *General considerations*). Reference 16 of the HRS documentation record as proposed is a map of the observed release samples within the AOC.

The remaining 85 samples were not used to delineate the AOC for various reasons. Sixty of these samples met the observed contamination criteria. Many of these samples had a lower concentration than another sample on the same property or at a different depth. Only 10.5 percent of the total 247 discrete soil samples did not meet observed contamination criteria for either arsenic or lead (see pages 145-156 of *Eureka Mills - Removal Preliminary Assessment Report*, Reference 14; and pages 13-20 and Appendix F of *Site Inspection Analytical Results Report*, Reference 6 of the HRS documentation record as proposed). Four samples that do not meet observed contamination criteria are located outside the AOC. In addition, the locations of samples within the AOC that do not document observed contamination are not clustered in any specific area suggesting gaps in the contamination. These samples seem to be scattered randomly through the town of Eureka, and many of these samples are located on properties that are contiguous to properties that contain observed contamination (see Reference 16; pages 16-18 and 145-156 of *Eureka Mills - Removal Preliminary Assessment Report*, Reference 14; pages 13-20 and Appendix F of *Site Inspection Analytical Results Report*, Reference 6).

EPA considers it impractical at this point of the investigation process to exclude areas at sampling points that do not document observed contamination in determining the AOC hazardous waste quantity because EPA has no information indicating that there are significant areas that do not meet observed release criteria associated with these sampling points. As explained above, the sample locations that do not document observed contamination are scattered randomly throughout the town. No pattern or distinct area of soil below the observed contamination criteria can be delineated. The exact boundaries of the area of contamination can be more appropriately adjusted during the Remedial Investigation/Feasibility Study stage as more complete sampling will be conducted at that time. Thus, since available information does not suggest that there are significant gaps in the AOC, the manner in which EPA delineated the AOC is appropriate.

Furthermore, even if the AOC size were to be reduced, the hazardous waste quantity (HWQ) factor value for this site would only be reduced from 100 to 10. HRS Section 2.4.2.2, *Calculation of hazardous waste quantity factor value*, provides that, "[f]or the soil exposure pathway . . . [i]f the hazardous constituent quantity is not adequately determined for one or more areas of observed contamination, assign either the value from Table 2-6 or a value of 10, whichever is greater, as the hazardous waste quantity factor value." If for some reason the AOC was reduced so that the HWQ value were reduced, a default of 10 could be assigned. If the HWQ was changed to 10, this would only reduce the pathway score to 603.9, which is still well above the maximum pathway value of 100 (see HRS Section 5.3, *Calculation of soil exposure pathway score*). In addition, the targets associated with 19 properties, within the AOC, with samples that do not document observed contamination were not included in the HRS score (see pages 34 and 35 of the HRS documentation record as proposed).

Regarding Chief's comment that EPA assumes that all of the area within the connected dots, excluding areas covered in asphalt, exhibit the same elevated arsenic concentration, EPA does not evaluate the

"level of concentration" when assessing the HWQ for an AOC. As is evident from the title, the HWQ evaluates the total "quantity" of waste. When considering an AOC, for the soil exposure pathway, the total quantity of waste would include those areas that meet the criteria set forth in HRS Table 2-3, *Observed Release Criteria for Chemical Analysis.* The concentration of contamination is taken into consideration only when identifying the areal extent of the contamination and when evaluating the targets at the site (see pages 13-24 and 33-35 of the HRS documentation record as proposed; HRS Sections 5.1.3.1, *Resident Individual* and 5.1.3.2, *Resident Population*). It is when evaluating targets that EPA determines "those areas of observed contamination subject to Level I concentrations and those subject to level II concentrations as specified in sections 2.5.1 and 2.5.2" (see HRS Section 5.1.3.1, *Resident Individual*).

4.1.3.8 Observed Contamination

Chief raised issues associated with the identification of observed contamination as it relates to background and data quality.

4.1.3.8.1 Observed Contamination: Background Location

Chief commented that the background arsenic concentrations were determined from two samples. It stated that the reference for these background samples indicated that the values came from sites around the Salt Lake Valley. It asserted that background levels should be determined near the site as it is a mineralized area and should be calculated from more than two samples.

In response, EPA has provided an appropriate background level for establishing observed contamination at the Eureka Mills site. The HRS does not provide specific instructions on the collection of background samples; nor does it stipulate the collection of a sample for establishing background level. It only indicates that a background level must be determined.

HRS Section 5.0.1 of the soil exposure pathway, *General Considerations,* directs the user to HRS Section 2.3 for the criteria for determining observed contamination. HRS Section 2.3, *Likelihood of release,* states to establish observed contamination based on "samples appropriate to the pathway being evaluated." Specifically, the minimum standard to establish observed contamination by chemical analysis is "analytical evidence of a hazardous substance in the media significantly above background level" (see HRS Section 2.3, *Likelihood of release*). Although the HRS refers to background concentrations, it does not require samples to establish background level in all cases; thus, at the Eureka Mills site, the use of two background samples to establish a background level is more than the HRS requires.

Furthermore, it appears that Chief has misunderstood EPA's documentation of how it established background levels in the HRS documentation record as proposed. Chief commented that the reference for the background samples indicated that the background values came from sites around the Salt Lake Valley. However, as stated on page 12 of the HRS documentation record as proposed, "In 2000, the UDEQ [Utah Department of Environmental Quality], in conjunction with EPA START, collected samples believed to be representative of local background conditions, *due to their location outside of the apparent area of contaminant deposition and proximity to the Eureka Mills site* [emphasis added]." These two samples were selected specifically as background samples during the site investigation. The samples that Chief is probably referring to are from a table compiled by UDEQ of inorganic background soil values for

the Salt Lake City area. EPA mentions these samples to demonstrate that the regional background levels for arsenic (14.90 mg/kg) and lead (127.51 mg/kg) are consistent and comparable in value to the site specific background values - arsenic (14.70 mg/kg) and lead (198J mg/kg) (see p. 12 of the HRS documentation record as proposed). The regional background levels, therefore, support the site specific background levels for arsenic and lead (see p. 12 of the HRS documentation record as proposed).

These two samples, MHET 82 and MHEW12, were chosen to represent background not only for their location outside of the apparent area of contaminant deposition, but also because, among the samples designated as background samples, they contained the highest concentrations detected for lead and arsenic and thus their use to calculate background is conservative. Background sample MHET 82 (sample location EM-SO-31), the first of the two samples used as representative of background, was collected from the hillside south of and above the Chief Mill [20]. Caution was taken to collect the sample above the historic rail grade found at this location to stay outside of the influence of any contamination that might be associated with the rail grade. The Chief Mill is located south of Eureka (see p. 6 and 19 and Figure 2 of *Site Inspection of the Eureka Mills*, Reference 6 of the HRS documentation record as proposed). Background sample MHEW 12 (sample location EM-SO-37) was collected from the hillside above the waste piles found at the Godiva, May Day, and Uncle Sam mill and mine sites. The waste piles at the Godiva, May Day and Uncle Sam Mine and Mill sites are located on a hillside overlooking the eastern portion of Eureka (see pages 6 and 18 and Figure 2 of *Site Inspection of the Eureka Mills*, Reference 6 of the HRS documentation record as proposed). Of the three background samples taken, MHET82 contained the highest, most conservative value for lead (198J mg/kg), and MHEW12 contained the highest, most conservative value for arsenic (14.7 mg/kg) (see p. 12 of the HRS documentation record as proposed; pages 18-20 of *Site Inspection of the Eureka Mills*, Reference 6). Additionally, both sets of soil samples, background and contaminated, were collected in the same six month period, and both sets of samples were analyzed under EPA approved methods (see p. 4 and Appendix F of *Site Inspection of the Eureka Mills*, Reference 6; and pages 1 and 20 of *Removal Preliminary Assessment Report*, Reference 14 of the HRS documentation record as proposed).

As is established above, the background samples were collected near but outside the influence of the site accounting for local mineral variability. They were, also, collected in the same time frame and analyzed under similar procedures as the contaminated samples. EPA considers this sufficient documentation to demonstrate that the background samples used to determine background level were appropriate for HRS purposes.

4.1.3.8.2 Observed Contamination: Data Quality

Chief commented that the analysis of the sample used to establish the background lead level does not meet quality control criteria. It asserted that determining background soil metal concentrations should consist of more than two samples and should use data that meet all quality control criteria. [19]

In response, EPA used data of appropriate quality to document observed contamination of lead at this site including the background level. Chief specifically questioned the quality of background sample MHET 82, which had a lead concentration of 198 J mg/kg, because this concentration is qualified (see p. 12 of the HRS documentation record as proposed). As explained in the factsheet entitled, *Using Qualified Data*

[20]The "Chief Mill" is a name used in Reference 6 of the HRS documentation record as proposed. Chief Mill also refers to the "flotation mill" east of Chief's No. 1 shaft mentioned on p. 29 of the HRS documentation record as proposed.

to Document an Observed Release and Observed Contamination - Reference 19 of the HRS documentation record as proposed, this qualifier does not mean the result is unusable for HRS purposes. A "J" qualifier, the qualifier given to MHET 82 sample data in this case, means that the presence of the substance is verified but that the associated numerical value is an estimated quantity because not all possible QC criteria were met (see p. 18, Appendix F (Sample Validation Report and CLP Data Sheets) of *Site Inspection of the Eureka Mills*, Reference 6 of the HRS documentation record as proposed). It was not, however, given an "R," which is assigned if the analysis result was rejected due to quality control problems. Specifically, this concentration was given a "J" qualifier because the continuing calibration verification (CCV) recovery exceeded QC limits. The QC limit is between 90-110%. Recovery for sample MHET 82 was at 111.5%. Since the recovery exceeded the QC limit, it is considered biased high. In other words, the concentration listed is higher than the actual concentration in the sample (see p. 82 Appendix F - Sample Validation Report and CLP Data Sheets of *Site Inspection of the Eureka Mills*, Reference 6 of the HRS documentation record as proposed). Given that the concentration is biased high, the concentration recorded for lead in sample MHET 82 is more conservative, because any contaminated sample concentration would still be three time above the true background concentration. Thus, it is appropriate to use biased high background levels for determining observed contamination.

Regarding Chief's comment about the need for more than two background samples, EPA has addressed this in Section 5.1.3.8.1 of this support document, *Observed Contamination: Background Location.*

4.1.3.9 Target Population

Chief commented that it appears that the students at the site have been double-counted – once as residents and once as students. It claimed that this has resulted in an over-estimation of the resident population value.

In response, EPA has appropriately accounted for the target population at the Eureka Mills site. HRS Section 5.1.3, *Targets*, states that a resident individual includes, "a person living or attending school or day care on a property with an area of observed contamination and whose residence, school, or day care center, respectively, is on or within 200 feet of the area of observed contamination." The HRS makes a distinction between each type of target or target property. Therefore, these targets are counted property by property. Targets that are counted multiple times account for multiple exposures. A target may be regularly exposed to contamination in multiple locations, such as at school and at home. Thus, multiple counting reflects the number of locations where that target is being exposed.

In addition, HRS Section 5.1.3.2, *Resident population* indicates that "[i]n estimating the number of people living on property with an area of observed contamination, when the estimate is based on the number of residences, multiply each residence by the average number of persons per residence for the county in which the residence is located." To eliminate any double-counting of students that are also residents (or vice versa), one would have to determine where each student lived. As indicated above, this level of documentation is beyond the scope of the screening function for which the HRS was intended. The Agency's method of assessing the population factor at the Eureka Mills site is reasonable and consistent with the HRS.

At the Eureka Mills site, targets included students exposed at two schools and residents whose homes area located within the AOC. "There are 93 residential soil samples that exhibit Level I arsenic contamination within the Eureka Mills study area. . . . These samples were all collected on the resident individual's

property and within 200 linear feet of the residence" (see page 33 of the HRS documentation record as proposed). Both Tintic High School and Eureka Middle School properties were also subject to Level I contamination (see p. 33 of the HRS documentation record as proposed). The total number of students at these schools were summed and included in the number of Level I resident population (see p. 34 of the HRS documentation record as proposed). Consistent with HRS Section 5.1.3.2, *Resident population*, residences subject to Level I concentrations of contamination were added and multiplied by the average number of individuals per residence in Juab County (2.5 individuals) (see p. 34 of the HRS documentation record as proposed). This total number of students and residences was multiplied by ten to obtain the Level I resident population factor value (see p. 34 of the HRS documentation record as proposed). Targets subject to Level II concentration included only residents. Residential properties subject to Level II concentration were summed and multiplied by the average number of individuals per residence in Juab County (2.5 individuals) to determine the Level II resident population (see p. 35 of the HRS documentation record as proposed). Thus, EPA has followed the criteria laid out in the HRS for determining resident population (HRS Section 5.1.3.2, *Resident Population*).

Furthermore, even if the students were not counted in the HRS site score as Level I targets, this site's score would remain 100 for the soil exposure pathway score and 50 for the HRS site score. As indicated on page 34 of the HRS documentation record as proposed, there is a total of 213 students and 232.5 residents exposed to Level I contamination. By not considering the students, this leaves 232.5 individuals exposed to Level I contamination. As required by the HRS, this value would be multiplied by ten to calculate a Level I concentrations factor value of 2,325 (see HRS Section 5.1.3.2.1, *Level I concentrations*). Referring to the resident population score sheet on page three of the HRS documentation record, the revised Level I concentrations factor value would become the value on line 6a of that score sheet. All of the other HRS factor values remain unaffected.

The revised HRS resident population factor value would become 2,852.5 (see p. 3 of the HRS documentation record as proposed). The revised overall target value of 907.5 would be calculated by summing the resident individual factor value (50), the resident population factor value (2,852.5), the worker factor value (5), the resources factor value (0), and the terrestrial sensitive environments factor value (0) (see p. 3 of the HRS documentation record as proposed).

The revised resident population threat score would be calculated by multiplying the likelihood of exposure value by the waste characteristics value by the targets value (550 x 32 x 2,907.5 = 51,172,000) (see HRS Section 5.1.4, *Calculation of resident population*; and p. 3 of the HRS documentation record as proposed). The pathway score would be determined by summing the resident population score and the nearby population score and dividing by 82,500 (620.3, subject to a maximum of 100) (see HRS Section 5.3, *Calculation of soil exposure pathway score*; and pages 3 and 4 of the HRS documentation record as proposed). As is evident, even without including the students as targets, the soil exposure pathway score would still be above the maximum of 100, thus leaving the HRS site score unaffected.

4.1.4 Conclusion

The original HRS score for this site was 50.00. Based on the above response to comments, the score remains unchanged. The final scores for the Eureka Mills site are:

Ground Water: Not Scored
Surface Water: Not Scored

Soil Exposure:	100.00
Air:	Not Scored
HRS Score:	50.00

Region 9

5.1 DEL AMO, LOS ANGELES, CALIFORNIA

5.1.1 List of Commenters/Correspondents

NPL-U34-3-10-1-R9	Comment dated January 30, 2001 from Albert M. Cohen of the Law Offices of Smiland & Khachigian, on behalf of the Harbor Gateway Commercial Property Owners Association
NPL-U34-5-10-R9	Correspondence dated October 17, 2000 from Gray Davis, Governor of California

5.1.2 Site Description and Proposal History

The Del Amo site is located within the Los Angeles city limits, Los Angeles County, California, in proximity to the cities of Torrance and Carson. From the early 1940s to the early 1970s, a synthetic rubber manufacturing facility operated on the 280-acre property. The facility consisted of the following three plants: a butadiene plant, a styrene plant, and a copolymer plant. The facility was dismantled in the early to mid 1970s, and the property is currently occupied by a business park. The Montrose Chemical Corporation NPL site is located just west and south of the Del Amo facility.

The HRS site score is based on three sources: a series of six disposal pits; two surface impoundments (evaporation ponds); and a NAPL (non-aqueous phase liquid) plume. These sources are also discussed in the 1998 Final Groundwater Remedial Investigation Report, prepared by Dames and Moore for Shell Oil Company and The Dow Chemical Company and reviewed by the EPA. This report identified 12 areas of concern for ground water contamination on the Del Amo site. The NAPL plume is located in area 3, the "NAPL contamination." The pits and surface impoundments are located in area 2; the contamination in the rest of the areas is identified as other sources in the 2000 HRS documentation record, but were not used in the HRS site score.

The NAPL contamination is composed primarily of benzene (90 percent) with lesser quantities of toluene, ethylbenzene, and styrene. It is located approximately 50 feet from the historic location of a 500,000-gallon crude benzene storage tank and extends laterally over an area of approximately 17,500 square feet. The NAPL plume is limited to the saturated zone, occurring as isolated blobs in a smear zone that extends vertically from the water table, at approximately 60 feet below ground surface, to 30 feet below the water table[1].

[1]"[R]ather than occurring in a single floating layer, LNAPL [light non aqueous phase liquid] in the MW-20 area is submerged in isolated ganglia over an approximately 30-foot interval beneath the water table. This mode of occurrence is consistent with conditions that can be expected after an LNAPL[light non aqueous phase liquid] has migrated through the vadose zone, intercepted the water table, and then been influenced by a rising groundwater table. The fact that the LNAPL is observed over a 30-foot interval indicates that groundwater has risen at least 30 feet since the LNAPL first intercepted the water table, and further supports hydrograph data indicating a relatively long term trend of rising groundwater." (page 4-1 of Reference 50 of the 2000 HRS documentation record, *Final Groundwater Remedial Investigation Report, Del Amo Study Area*).

The pits and surface impoundments sources together cover approximately 3.7 acres in the southern portion of the site. The pits and ponds received process wastes from the styrene manufacturing plant. The pits and ponds have been covered by an engineered cap consistent with the 1998 *EPA Record of Decision* which selected remedial actions for the Del Amo waste pits operable unit. Hazardous substances in the waste remaining in the pits and ponds include benzene, ethylbenzene, and naphthalene.

Contaminated soils located beneath the waste pit area have come to be located below the water table, due to rising ground water levels. These soils are contaminated with the same hazardous substances that are found in the waste remaining in the pits (e.g., benzene, ethylbenzene, and naphthalene).

Ground water is contaminated with benzene at concentrations up to 1,200,000 Fg/L and other hazardous substances. This contamination threatens 14 municipal drinking water wells within 4 miles of the Del Amo site drawing ground water from an interconnected aquifer system located in part below the site.

The Del Amo site was first proposed using the present HRS on Monday, July 29, 1991 (56 FR 35840). Comments on the site listing were received by EPA, including several comments after the comment period closed. At that time, the site HRS evaluation was based on the potential for hazardous substances to migrate to ground water from eight backfilled sources: two evaporation ponds and six disposal pits. These sources are located on a 4-acre portion of the 280-acre property; documentation suggested that the sources contained wastes from all three plants that made up the facility. The hazardous substances identified as associated with these sources included chlorinated solvents, aromatic hydrocarbons, and several hazardous metals. The key chemicals for HRS scoring purposes were cadmium and total chromium. People possibly exposed to the potential release were those people using the interconnected ground water aquifers located beneath the site as a source of drinking water. The aquifers were all considered interconnected for HRS purposes.

After EPA proposed the site in 1991, Dames & Moore conducted a Phase I Remedial Investigation that added substantially to EPA's understanding of the site and the threat posed. To better inform the public, EPA prepared a new HRS evaluation and reproposed the Del Amo site on June 17, 1996, stating that it would accept comments on this new proposal based on this new HRS evaluation. EPA also obtained a letter from the State of California Environmental Protection Agency (CEPA) concurring with the listing decision. Some of the HRS evaluation varied from the 1991 evaluation, although the main threat evaluated remained the release to ground water and the same sources were evaluated. EPA identified an actual release to ground water of several hazardous substances; considered different hazardous substances in the waste characteristics component of the evaluation; presented a more comprehensive rationale for determining that the aquifers were interconnected; and used more current conditions for evaluating the users of the ground water.

Following EPA's response to public comments on this proposal, the Del Amo site was promulgated on the NPL on September 25, 1997. This listing, however, was challenged in the United States Court of Appeals for the District of Columbia. This Court vacated the listing, finding that the endorsement of the proposed listing by the Deputy Director of the California Department of Toxic Substances Control did not meet the requirement of the Omnibus Consolidated Rescissions and Appropriations Act of 1995 that NPL listings be endorsed by the Governor of the relevant state. Although this requirement is no longer in effect, present EPA policy is generally to request a concurrence from the State to list a site on the NPL. In accordance with this EPA policy, EPA sought and received a letter from Governor Gray Davis of California in support of this listing.

On December 1, 2000, EPA again proposed the Del Amo site for the NPL after making additional modifications to the HRS documentation record to address certain technical issues raised in the previous public comment period. The HRS evaluation of the Del Amo site scored the six pits and the two buried surface impoundments, as well as NAPL contamination as sources. The same threat, a release to ground water, was evaluated. Observed releases by direct observation and by chemical analysis were scored, and the key contaminants in the evaluation are benzene, ethylbenzene, and naphthalene. Fourteen wells withdrawing ground water from the interconnected aquifers within 4 miles of the site were evaluated as potential target wells.

5.1.3 Summary of Comments/Correspondence

Governor Gray Davis of California submitted a letter in support of the placement of the Del Amo site on the NPL.

Albert M. Cohen of the Law Offices of Smiland and Khachigian wrote on behalf of the Harbor Gateway Commercial Property Owners Association (herein referred to as HGCPOA) in protest of the listing. Comments submitted by Mr. Cohen will be referred to as those of HGCPOA.

HGCPOA contested the listing on several grounds. It stated that placing the site on the NPL is an abuse of EPA's discretion and will cause significant financial harm to the present owners of the properties included as part of the site. It stated that in its comments on the prior listings of the Del Amo site, it has submitted financial data on the adverse economic impact of listing the site. HGCPOA contended that EPA has already selected remedial options for this site, some of which have been implemented. According to HGCPOA, EPA should defer listing this site because the potentially responsible parties (PRPs) have been funding the response actions.

HGCPOA commented that EPA is seeking to include all 280 acres of the Del Amo property as part of the site without justification. According to HGCPOA, the site should only consist of the contaminated sources and the areas in between. It added that the HRS does not provide for including potential sources. HGCPOA also stated that listing the 280-acre facility will require the uncontaminated areas to undergo a complicated delisting process to be removed from the NPL.

HGCPOA stated that the targets scored for the ground water migration pathway are not likely to be impacted by the contaminated ground water. It supported this claim by stating that ground water flow in the vicinity of the site is not in the direction of several ground water wells located north of the site. According to HGCPOA, EPA also erred in evaluating the Silverado aquifer as part of the drinking water aquifer scored for the Del Amo site. It stated that the evidence EPA used to support the interconnection of the Silverado aquifer to the other overlying aquifers is not supportive of this claim. It stated that in its comments on the prior listings of the Del Amo site, it has submitted a report by Steve Larson which contains evidence that disputes aquifer interconnection at the site. HGCPOA also commented that the EPA Record of Decision to address the contaminated ground water states that the contaminated LNAPL plume scored at the site is not migrating and does not pose any risk to drinking water.

5.1.3.1 Administrative Record

HGCPOA stated that it incorporated by reference into the administrative record for this listing the following documents: (1) the HRS scoring package; (2) all documents referenced in the scoring package; (3) all documents listed in the Montrose Chemical Corporation Site File Index; (4) all files relating to the prior attempts to list the Del Amo site on the NPL including the scoring packages and comments submitted regarding the proposed listings; (5) all documents related to the matter captioned *HGCPOA v. U.S. EPA,* Case No. 97-1737 (U.S. Court of Appeals for the District of Columbia), including all related briefs and the administrative record in that case; (6) and all documents which are part of the Waste Pits Operable Unit administrative record Index. HGCPOA stated that since all of these documents are already in EPA's possession, it is not providing separate copies of these documents.

In response, the administrative record for an Agency rule, including an NPL listing rule, consists of all materials that an Agency relies upon in the rulemaking. The Superfund docket for this rulemaking includes the materials or references to materials relied upon by the Agency in this rulemaking. Relevant comments received during the public comment period and the Agency's responses thereto are also part of the administrative record. Documents that are cited by HGCPOA to support relevant comments on the will be considered in this support document for the Del Amo site and will be added to the docket for this rule. In addition, any documents that EPA relies upon to respond to relevant comments raised by HGCPOA will also be added to the docket for this rule. In responding to specific comments in this support document, EPA will specify when documents cited by HGCPOA have been added to the docket. However, consistent with the Court's decision in *Northside Sanitary Landfill, Inc. v. EPA* (849 F.2d 1516, 1519 (D.C. Cir., 1988), EPA is not obligated to review documents that HGCPOA refers to in its comments without specifying the relevant information from those references and the impact on the Del Amo HRS evaluation. For example, as of August 2002, there were fourteen thousand, four hundred and eighty one (14,481) documents in the EPA Montrose Chemical and Del Amo site file index, which is just one of the six sets of documents that the commenter attempts to incorporate by reference.[2] The administrative record for the *Record of Decision for Dual Site Groundwater Operable Unit Montrose Chemical and Del Amo Superfund Sites* contains five thousand, one hundred and four documents (5,104) and is a sub-file in the EPA Region 9 Montrose Chemical and Del Amo site file.

5.1.3.2 EPA Discretion

HGCPOA commented that EPA has re-scored this site three times based on three different alleged chemicals of concern. It considered that this demonstrates that "EPA will do virtually anything to get this site listed on the NPL because it has clearly pre-determined that it is going to list the site regardless of the factual information available regarding the site." HGCPOA stated that in this fourth proposal, rather than relying on liquid cadmium[3] as it did in 1991, and H_2S as it did in 1996, EPA scored the site based upon the presence of benzene. According to HGCPOA, "EPA's proposal is inappropriate given what is known about the site," and listing demonstrates that EPA has prejudged the outcome.

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[2]EPA believes that the commenter intended to reference the Montrose Chemical and Del Amo site file index. Because of the interconnected ground water plumes from the Montrose and Del Amo properties, EPA Region 9 physically maintains, and electronically tracks, EPA records for these two sites as one combined site file. EPA uses a coding system (operable unit numbers) in the index for this site file to identify whether the document is most related to the Del Amo or Montrose site.

[3]EPA did not rely on liquid cadmium in prior proposal; rather, dissolved cadmium was used.

According to HGCPOA, when scoring a site, "EPA must exercise reasonable judgment and discretion to insure that the site reliably reflects the site's eligibility for listing and its relative risk." HGCPOA noted that the "law demands that EPA's decision to add a property to the NPL not be arbitrary and capricious," and that in *Kent County, Delaware Levy Court v. EPA*, 963 F. 2d 391 (D.C. Cir. 1992) the Court held that "EPA acted arbitrarily and capriciously by failing to include certain documents in the record and by relying on unsound evidence and that the EPA's actions were 'inconsistent with rational decision making by an administrative agency.'"

HGCPOA commented that EPA's actions were in violation of both the *HRS Guidance Manual* and CERCLA which require that EPA "accurately assess [ ] the relative degree of risk to human health and the environment posed by [the] site[ ]" CERCLA § 105 (C)(1), 42 U.S.C. § 9605(c)(1). HGCPOA contended that EPA's failure to take into account readily available information in its site scoring constitutes an abuse of discretion and violates CERCLA. It stated that "[i]n *National Gypsum C. v. United States EPA*, 968 F.2d 40, 41 (D.C. Cir. 1992), the Court held the EPA must 'support its decisions with the necessary scientific findings' and its failure to 'explain adequately the scientific basis for its decisions as well as its failure to offer substantial evidence in support of its decision' is proper ground for vacating a listing decision." HGCPOA stated that qualitative information regarding the site may be as important as the numerical HRS score in determining some aspects of the relative risk of the site. HGCPOA quoted from page 11 of the *HRS Guidance Manual*:

> The site assessment process should not be viewed simply as an exercise to achieve the maximum HRS score possible by always scoring every pathway, not as a mechanical process that automatically ends when a score of 28.5 is reached. The scorer must make decisions about whether to score individual pathways or threats based on knowledge of the site, professional judgement and experience, and an understanding of how the site score might be affected.

Citing the *HRS Guidance Manual* and several other court cases[4], HGCPOA concluded that the "EPA must demonstrate the existence of a rational relationship between the HRS model and what is at issue."

According to HGCPOA, Del Amo is not a site that EPA has only recently begun collecting information on and has only limited data upon which to base its scoring. HGCPOA pointed out that this site has been the subject of numerous investigations dating back 20 years. It added that EPA has already selected remedies for the two areas upon which the scoring is based, the Del Amo Pits Operable Unit and the Non-Aqueous Phase Liquid benzene plume. HGCPOA stated that the remedy for the Del Amo Pits Operable Unit has already been implemented, and the potentially responsible parties have been working with EPA for years to complete the investigation and remedial work at the site.

In response, EPA has placed the Del Amo site on the NPL because the HRS site score was sufficient to warrant listing. CERCLA Section 105(a)(8)(A) required the establishment of criteria for determining priorities among releases or threatened releases; the Agency listed three methods in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) by which releases may be determined eligible for the NPL. As one of the three methods for placing a site on the NPL, the NCP at 40 CFR 300.425(c)(1) states that a release may be included on the NPL if "[t]he release scores sufficiently high

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[4]*National Gypsum Co*. 968 F.2d at 45; *Tex Tin Corp. v. U.S.EPA*, 992 F.2d 353. 354; *Chemical Mfrs. Ass'n. V. EPA*, 28 F.3d 1259, 1265 (D.C. cir. 1994); *Edison Elec. Inst. V. U.S. EPA*, 2 F.3d 438, 446 (D.C. Cir. 1993). *American Iron & Steel Institute v. U.S. EPA*, 115 F.3d 979, 1004 9D.C. Cir. 1997)

pursuant to the Hazard Ranking System as described in Appendix A to this part (40 CFR Part 300.425)." The revised HRS used in the scoring was promulgated on December 14, 1990 (55 FR 51569), and this support document shows that it was correctly applied in the evaluations applied to this site. As indicated in the 2000 HRS documentation record for the Del Amo site, the site scored 47.12, which is well above the HRS cutoff score of 28.50, and it remains so after consideration of the comments received regarding this proposed listing (65 FR 75215-75221 (December 1, 2000). That the hazardous substances used in scoring under previous proposals vary from those used to support this final listing does not demonstrate an error. As discussed below, the substances in the present scoring are correctly considered.

In the previous proposal of the Del Amo site, hydrogen sulfide (H_2S), benzene, ethylbenzene, and naphthalene were associated with the waste pits source. H_2S obtained the highest toxicity/mobility factor value associated with the site and was a key factor contributing to the 1996 proposed HRS site score. In the December 1, 2000 reproposal of the site, the HRS scoring does not consider H_2S because a different approach based on the most recent data available was considered in the HRS site scoring. This new approach documented a site score above 28.50 without relying on an approach that a commenter[5] on the 1996 proposal objected to.

Benzene, ethylbenzene, and naphthalene were associated with both listings (page 35 of the 1996 proposed HRS documentation record and page 60 of the 2000 HRS documentation record as reproposed). For this most recent evaluation, the waste characteristics of benzene and naphthalene were used to calculate the ground water pathway waste characteristics factor value. Benzene was documented to be present in Sources 1, 2, and 3 and in the observed release analytical data (see pages 55 through 60 of the 2000 HRS documentation record). Ethylbenzene was documented to be present in Sources 1, 2, and 3 and naphthalene in Source 1 and 2 at the site (page 60 of the 2000 HRS documentation record). The sources and the release scored at the site still pose a risk to the environment. See Section 6.1.3.3 of this support document for discussion on the risk posed by the site. EPA has added the 1996 HRS documentation record for Del Amo to the docket for this NPL listing (Sfund-2001-0004-0045).

5.1.3.3 Ground Water Pathway Risk

HGCPOA stated that EPA improperly evaluated the ground water pathway. It contended that scoring the site on the alleged ground water migration pathway is inappropriate because "EPA has already selected the groundwater remedy and, in fact, determined that no real groundwater remediation is required." As summarized below, HGCPOA claimed that the remedial efforts to date at two of the site's operable units, the Waste Pits operable unit (OU#2) and the Ground Water operable unit (OU#3) show that presently the risks associated with these units have been addressed.

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[5] Mr. C. B. Paine, Manger of Remediation, Shell Oil Company submitted comments questioning hydrogen sulfide in the 1996 proposal of Del Amo to the NPL (see pages 3 to 5 of Mr. C. B. Paine's comments dated August 15, 1996 which EPA has added to the docket for this NPL listing [Sfund-2000-0004-0051]). In those comments, Mr. Paine argued that H_2S was not shown to meet the criteria for an observed release to ground water and that H_2S could not be associated with a source with a ground water containment factor value of greater than zero. Although EPA believes the approach in the 1996 proposal was consistent with the HRS, it chose to use a different approach in the 2000 reproposal to avoid unnecessary controversy. (see Sections 3.1.3.8, *Observed Release of Hydrogen Sulfide*, and 3.1.3.9, *Toxicity/Mobility of Hydrogen Sulfide*, of Support Document for the Revised National Priorities List Final Rule-September 1997). The Support Document for the Revised National Priorities List Final Rule-September 1997 has been added to the docket for this NPL listing (Sfund-2000-0004-0050)

In relation to Operable Unit #2, HGCPOA noted that in 1998 EPA issued a Record of Decision for the Del Amo Waste Pits Operable Unit. HGCPOA stated the following:

- EPA determined that the remedy would include capping and vapor extraction.

- EPA performed a risk assessment which 'did not quantitatively evaluate risks associated with contaminated groundwater' because the groundwater risks were to be 'assessed separately and presented at the time EPA issues its proposed remedial plan for groundwater at the Del Amo Site' (HGCPOA cited from page 16 of *Record of Decision for Del Amo Waste Pits Operable Unit*).

- When EPA selected a remedy for the 'Dual[6] Site Groundwater Operable Unit,' it found that no additional remediation was necessary in the area of the Del Amo Pits Operable Unit to address the groundwater migration pathway (page 45 of *Remedy Proposed Plan for Dual Site Groundwater Operable Unit*, June 1998).

HGCPOA stated: "Thus, EPA has already chosen the remedy for the alleged risks associated with the Del Amo Pits and their potential impact on groundwater and has determined that no further action is required. In face of these facts, it is arbitrary and capricious for EPA to use information regarding the potential contribution of the Del Amo Pits to determine a site score."

HGCPOA made the following statements on the remediation efforts at the Del Amo site:

- EPA's remediation for the Del Amo Pits Operable Unit, a cap and vapor extraction system, has been installed. The purpose of the caps was to prevent rainwater from washing through the waste pits and carrying contaminants into the ground water, and to prevent rainwater from flowing through the contaminated vadose zone soils below the pits and carrying them into the ground water. EPA found that the cap 'would reduce contaminant migration to the ground water' and this interim action will also reduce the continued migration of contaminants from the waste material into the groundwater to a negligible amount.

- The vapor extraction system is not yet in operation because EPA has not selected a treatment method for the vapors, although the extraction system has been in place for over two years.

HGCPOA added that EPA has not required that the vapor extraction system be implemented, and this demonstrates that EPA does not really believe that this area still poses a threat to ground water.

In relation to OU#3, HGCPOA stated that "EPA found that '[t]he benzene plume is much smaller than what would be expected based on groundwater velocity and expected retardation in the absence of intrinsic biodegradation; benzene has not migrated far from the LNAPL sources despite being in the ground 20-40 years.'" HGCPOA further claimed that EPA "found that 'the plume appears to be at a steady state and does not appear to be migrating laterally.'" HGCPOA added that EPA also "found that '[t]here is currently no municipal water or municipal production wells in use within the area of contaminated groundwater under the joint site.'" HGCPOA also claimed that EPA is "not aware of any private potable water wells within the contaminated groundwater affected by the joint site.'" It claimed that "'[c]urrently, there is not an immediate direct risk from groundwater at the joint site because no one is currently drinking the contaminated groundwater and so there is no current exposure to groundwater

[6]Montrose Chemical and Del Amo Superfund Sites.

contaminants.'" In sum, HGCPOA claimed that EPA has already decided that the benzene which has been found in groundwater at the Del Amo site does not pose a threat to any drinking water aquifers. Therefore, scoring the site based on the groundwater migration pathway is inappropriate.
In response, EPA correctly and appropriately scored the ground water pathway because there remains significant risk associated with the site that has yet to be addressed. If HGCPOA is implying that the contamination has been addressed such that there are no remaining releases, it is incorrect. The Del Amo site has been a subject of investigation for over 20 years and has been associated with several known releases of hazardous substances. Although there has been ongoing activity to address specific risks associated with the site, there is still significant risk that has not been addressed. The RODs and other reports that have been issued to date do not address all risk to the ground water pathway and do not suggest that the site poses no ground water risk. In addition, there are ten additional sources at the site that pose a threat to ground water that have not been addressed by the RODs issued to date. See Section 6.1.3.6.3, *Other Sources*, of this support document.

HGCPOA's comment that EPA has determined that no real remediation of the ground water is required is incorrect. The *Del Amo Record of Decision for the Waste Pits Operable Unit*[7] only addresses the waste in Sources 1 and 2 of the Del Amo site. This ROD does not address the hazardous substances in the ground water nor does it say no ground water remediation is necessary. The implementation of the cap and vapor extraction will prevent accessibility to the waste and retard the further migration of hazardous substances to the ground water. Because the *Del Amo Record of Decision for the Waste Pits Operable Unit* does not address the ground water beneath the pits, EPA has issued the *Record of Decision for Dual Site Groundwater Operable Unit Montrose Chemical and Del Amo Superfund Sites*, which also does not say no remediation is required. Moreover, the issuance of a ROD without complete implementation does not mean that EPA is not concerned about the present risk at the site. The full implementation of a ROD is an ongoing process and each step or phase is contingent upon the other. The following two documents have been added to the docket for this NPL listing: *Record of Decision for the Del Amo Waste Pits Operable Unit* (September 5, 1997) (Sfund-2000-0004-0048); and *Record of Decision for Dual Site Groundwater Operable Unit Montrose Chemical and Del Amo Superfund Sites* (March 1999)(Sfund-2000-0004-0049).

While the *Record of Decision for Dual Site Groundwater Operable Unit Montrose Chemical and Del Amo Superfund Sites*, which addresses the ground water beneath the pits area, does state that "the remedial action selected by this ROD does not remove NAPL from the ground nor immobilize it," this ROD continues:

> The existing mass of NAPL and the potential for NAPL migration create significant uncertainties that the remedial action selected in this ROD will continue to remain protective of human health and the environment over the long term. To address such uncertainties, EPA will undertake a second phase of remedial decision making for this groundwater operable unit, which will address whether and to what degree NAPL shall be recovered (removed) from the ground and/or immobilized at each of the two sites. (Section 4, Description of Remedy, *Record of Decision for Dual Site Groundwater Operable Unit Montrose Chemical and Del Amo Superfund Sites*).

[7]An operable unit is a portion of a site for which EPA selects a remedial action separately from the other operable units or the overall site. Operable units can be defined by distinct physical areas of a site, contaminated medium (e.g., ground water vs. soils), or contaminants (e.g., metals vs. solvents). For the proposed Del Amo site, EPA has broken the RI/FS activities into three components: Operable Unit #2 the Waste Pits Area, Operable Unit #3, contaminated groundwater, and Operable Unit #1 which at present includes the remainder of the proposed Del Amo site (primarily soil contamination and the NAPL plume) .

The *Record of Decision for Dual Site Groundwater Operable Unit Montrose Chemical and Del Amo Superfund Sites* indicates that the NAPL and the contaminants (e.g., benzene) within the containment zone[8] will be contained by two methods: (1) ground water extraction and treatment, and (2) monitored intrinsic biodegradation (Section 4, Description of Remedy, *Record of Decision for Dual Site Groundwater Operable Unit Montrose Chemical and Del Amo Superfund Sites*). Also, as stated above, EPA will undergo a second phase of remedial decision making to address the NAPL. It is possible that innovative technologies, as they become available, may be considered to address the contamination that remains at this site. Thus, this ROD requires further remedial activities to be conducted at the site regarding the NAPL and the related threat it poses to ground water. It does not state that no further action is required.

The following EPA statements in Section 8.5, Basis for Action, *Record of Decision for Dual Site Groundwater Operable Unit Montrose Chemical and Del Amo Superfund Sites*, further undercut the commenter's claim that EPA has determined that the ground water contamination does not pose a threat:

- The ground water would pose an extreme risk if ever used (exceeding 10^{-2} cancer risk and hazard indices in excess of 10,000);
- The NCP requires that EPA consider the potential future uses of ground water;
- The ground water contamination may continue to move either as a result of a direct or indirect movement of NAPL or as a result of continued dissolved phase contamination;
- The contamination may move from aquifers or areas that are not presently used for drinking water to aquifers or areas that are used for drinking water. Protection is necessary for the heavily used Silverado aquifer, which underlies the present extent of contamination at the Joint Site.
- The ground water would likely be used to some degree if it were not contaminated, as evidenced by the presence of some wells in the area and plans by cities to install more wells.

EPA also notes that State of California requirements indicate that further remedial efforts associated with the site would likely be performed, specifically regarding the ground water plume, regardless of whether or not the contaminated ground water is presently used as a source for drinking water. The California Regional Water Quality Control Board (RWQCB), Los Angeles Region, has determined that all ground water units in the vicinity of the Del Amo site are to be considered potential sources of drinking water pursuant to States Resources Control Board Resolution 88-36 (pages 47 to 59 and 63 of the 2000 HRS documentation record).

[8]"Dissolved phase contamination in a specifically-bounded, monitored zone of groundwater, as defined in the Decision Summary, shall be contained and isolated indefinitely such that the contamination cannot escape the zone. This zone is referred to by this ROD as the ***containment zone***. By containing the dissolved phase contamination surrounding the NAPL, this action isolates the NAPL from the remainder of groundwater." (Section 4, Description of Remedy, *Record of Decision for Dual Site Groundwater Operable Unit Montrose Chemical and Del Amo Superfund Sites*).

Regarding HGCPOA's suggestion that EPA did not take into account information concerning response work that has been done at the site, although HGCPOA does not specify how such response work should impact the scoring of the site, EPA notes that EPA's policy is to consider certain response actions to increase incentives for rapid response actions at sites. The preamble to the HRS discusses consideration of response actions in the assignment of HRS scores (55 FR 51568, December 14, 1990). The preamble states that EPA will calculate waste quantities based on "current conditions," which may differ from initial conditions, as the result of a response action; however, the preamble notes that this approach must ensure that "the HRS score reflects any continuing risk at sites where contamination occurred prior to any response action" and that "the accuracy of this approach depends on being able to determine with reasonable confidence the quantity of hazardous constituents remaining in sources at the site and the quantity released to the environment." The preamble further states that "removal actions may not reduce waste quantity factor values unless the quantity of hazardous constituents remaining in sources and in releases can be estimated with reasonable confidence" and that "parties undertaking removal actions will have primary responsibility for collecting any data needed to support a determination of the quantity of hazardous constituents remaining."

An EPA policy, (*The Revised Hazard Ranking System: Evaluating Sites After Waste Removals*, OSWER Publication 9345.1-03FS, October 1991)addresses in further detail the circumstances under which response actions will generally be considered in scoring a site under the HRS. In this case, consideration of the response work would not change the site score such that adding the site to the NPL would not be appropriate. Even if EPA did consider the cap and vapor extraction system at Sources 1 and 2 and that the NAPL contamination poses an indirect risk to targets, these considerations do not change the containment factor value of the sources at the site. That is, according to HRS Table 3-2, *Containment Factor Values For Ground Water Migration Pathway*, for Sources 1 and 2, which are evaluated as surface impoundment source type, a containment factor value of 10 would still be assigned because HRS Table 3-2 provides for surface impoundments with no liner, or with evidence of hazardous substances migration from the source areas to be assigned a value of 10. For the NAPL contamination, which is evaluated as source type "other" under the All Sources (Except Surface Impoundments, Land Treatment, Containers, and Tanks) source type, HRS Table 3-2 provides for a value of 10 to be assigned if there is evidence of hazardous substance migration from the source. Thus, the three sources are eligible for HRS evaluation because they are not adequately contained to prevent migration. HRS Section 2.2.3, *Identify hazardous substances available to a pathway*, states that for the ground water pathway, consider hazardous substances available to migrate from sources at the site for all sources having a containment factor value greater than zero. Furthermore, the site score will remain the same because the contamination in the sources at the site still remains, and the resulting containment factor values and hazardous waste quantities will remain the same.

In summary, the above information confirms that there is significant contamination that warrants listing on the NPL. It also refutes HGCPOA's comment that there is no remaining risk posed by Operable Unit #2, the waste pit areas (including Sources 1 and 2), or Operable Unit #3, which includes the ground water benzene contamination plume at the site and the NAPL plume that was evaluated as Source 3 of the Del Amo HRS site. Thus, EPA's decision to list the site based on the HRS score generated from an evaluation of the ground water migration pathway was reasonable.

5.1.3.4 Defer Listing Site

HGCPOA commented that because EPA has already selected a remedial option for this site and some of the options have been implemented, EPA should defer the listing until it becomes obvious that none of the PRPs is cooperating in the implementation of the selected remedies. It added that EPA's *Guidance on Deferral of NPL Listing Determinations While States Oversee Response Actions* "allows EPA to defer actions where the actions are being supervised[,] and the PRPs are funding the response actions." HGCPOA contended that EPA should abide by this policy because at the Del Amo site, the PRPs are implementing the proposed remedy.

In response, consistent with EPA's *Guidance on Deferral of NPL Listing Determinations While States Oversee Response Actions* (OSWER Directive 9375.6-11), EPA has not deferred this site to the State of California, and EPA has appropriately evaluated the Del Amo site for inclusion on the NPL. The purpose of EPA's *Guidance on Deferral of NPL Listing Determinations While States Oversee Response Actions* is to defer to States those sites that the States want deferred. An important aspect of that policy is that sites should generally not be deferred unless that state expresses an interest in deferral. The State of California has not requested that the site be deferred to it. In fact, the California governor has expressed support for NPL listing. Although EPA's deferral policy does state that sites being deferred to the State should have viable and cooperative PRPs, having a viable and cooperative potentially responsible party is not the only criterion for a site's eligibility for deferral. It is also important to note that the State of California was the lead Agency for the Del Amo site from 1983 to1991 (see *Record of Decision for the Waste Pits Operable Unit* at 7). The State of California attempted to have the PRPs produce an acceptable Remedial Investigation/Feasibility Study for the waste pits under an administrative order with the PRPs. *Id.* Instead, in1991, the state of California issued a notice of noncompliance to the PRPs and terminated the order. *Id.* EPA then assumed the lead agency role for this site.

5.1.3.5 Economic Impact/Stigma

HGCPOA contended that listing the Del Amo site on the NPL will cause significant financial harm to property owners, and because of that, EPA has an obligation to ensure that its listing decision is not arbitrary and capricious. It added that "[l]isting makes the property 'unmarketable by taking away the marketability of the [property] which would have existed prior to the issuance of the score' and, therefore, creates a real loss for property owners. *SCA Services of Indiana, Inc. v. Thomas*, 634 F. Supp. 1365 (N.D. Ind. 1986)." According to HGCPOA, the courts have recognized the severe impact merely listing a site on the NPL can have on properties included on the list. It cited the following court cases to support its comment: *Kent County v. United States EPA*, 963 F. 2d 391, 394 (D. C. Cir. 1992); *Matter of CMC Heartland Partners*, 966 F. 2d 1143, 1145 (7th Cir. 1992).

HGCPOA stated that since 1991, its members have suffered significant financial harm associated with the attempted listing. It also stated that with its comments on the 1991 listing, it has submitted financial data demonstrating the negative impact that the prior listings caused, which is applicable to this listing as well; HGCPOA requested that this information be incorporated by reference. Late comments submitted by Andrew G. Schwebel of HGCPOA on the 1991 proposal contained an attachment prepared by Michael L. Condon, a certified public accountant. Mr. Condon provided a signed statement that NPL listing will have substantial negative impact on the value of the properties. However, no documentation was provided with that statement showing the actual negative impact of the listing. Mr. Condon stated that "[i]n recent years, office buildings in this area have sold for about $100 per foot, industrial properties for

about $45 per foot and land for about $25 per foot." He added: "In my opinion, if the site is listed on the NPL, it will be virtually impossible to sell, lease or refinance these properties. As a result, the properties could be rendered virtually worthless." The Declaration of Michael L. Condon (signed November 25th, 1992) has been added to the docket for this NPL listing (Sfund-2000-0004-0047).

According to HGCPOA, including its properties on the NPL will likely cause HGCPOA members significant harm by drastically reducing the value of their properties, restricting their ability to sell or refinance their properties, and making it difficult even to lease the properties. HGCPOA contended that EPA cannot dispute that including these parcels in the Del Amo site will cause significant harm to HGCPOA members and other property owners. HGCPOA finds a failure to act properly by EPA may well constitute a taking of property.

In response, as is demonstrated by EPA's responses to HGCPOA's specific comments, EPA's decision to list the Del Amo site on the NPL is not arbitrary and capricious. With respect to HGCPOA's claims concerning financial harm imposed by the listing, EPA notes that the listing of this site on the NPL will not impose any liability or direct obligations on any entity. Furthermore, the listing of this site establishes no standards or regulatory regime that any entity must meet. Whether an entity is liable for response costs for a release of hazardous substances depends on whether that entity is liable under CERCLA 107(a). Any such liability exists no matter whether the site is listed on the NPL.

Although the remedial investigation of soil contamination at the site has not been completed, the fact that there is extensive and significant hazardous substance contamination at the Del Amo site remains regardless of whether the site is listed on the NPL. Such information is readily accessible to the public, including current property owners and potential purchasers, especially through EPA fact sheets, the Region 9 website, and local information repositories.

With regard to HGCPOA's comment that it had submitted "financial data" that listing the site on the NPL has already negatively impacted the value of the properties, no documentation was provided showing the actual negative impact of the listing.

With specific regard to HGCPOA's comment that listing may constitute a taking of property, EPA does not agree that listing a release of hazardous substances on the NPL constitutes a "taking" of private property under the Fifth Amendment to the United States Constitution. An NPL listing does not impose any restrictions on the use of the property subject to the listing.

5.1.3.6 Extent of Site

HGCPOA stated that if EPA chooses to list the Del Amo site on the NPL, it must revise the site description to accurately describe those areas which are part of the site. EPA's response to HGCPOA's comments on the extent of site are divided into the following four subsections: extent of contamination, site name, other potential sources, and delisting uncontaminated areas.

5.1.3.6.1 Extent of Contamination

HGCPOA contended that it would be arbitrary and capricious for EPA to include all 280 acres of the rubber plant as part of a the site when only sources and the areas between the sources should be considered part of the site.

HGCPOA cited the following from the *Federal Register* notice of the proposed listing (65 FR 74215-75221, December 1, 2000):

> When a site is listed, the approach generally used to describe the relevant release(s) is to delineate a geographical area (usually the area within an installation or plant boundaries) and identify the site by reference to that area. As a legal matter, the site is not coextensive with that area, and the boundaries of the installation or plant are not the boundaries of the site. Rather, the site consists of all contaminated areas within the area used to identify the site, as well as any other location to which contamination from the area has come to be located, or from which contamination came.

According to HGCPOA, in EPA's published NPL Site Narrative for the Del Amo site, the site boundaries are not clear from the description, and it is not clear whether the terms property and facility are coextensive with the term Del Amo site; if they are, HGCPOA contended that the description is highly problematical because it implies that the entire former facility is the site even though EPA did not score any locations other than the LNAPL plume and the Del Amo pits. HGCPOA added that there is no evidence in the scoring package that any releases ever occurred on many of the parcels which compose the entire facility, and that this is arbitrary and capricious to include these parcels given the extreme and unjustifiable financial harm which could result to the owners of those properties.

HGCPOA contended that EPA's intent to include all 280 acres in the definition of the site is arbitrary and capricious because EPA has included areas that lie well outside of EPA's definition of a site. HGCPOA cited the definition of site[9] and source[10] from 40 CFR Part 300, App. A § 2.2.1 (1990) and stated that "the only areas than can be considered part of the 'site' for NPL purposes are: (1) areas where hazardous wastes have been deposited, stored, disposed, placed, or otherwise come to be located; (2) areas where soil has become contaminated from the migration of a hazardous substance; and (3) areas that may be located between those areas listed in (1) and (2)."

According to HGCPOA, the site should not include areas other that the Del Amo pits, the plume, and the area in between. It added that the site score is based solely on the four-acre Del Amo Pits area and the area affected by the LNAPL deposit (LNAPL plume). HGCPOA commented that EPA did not score any sources located on the Co-Polymer Plant or the Butadiene Plant and only the scored sources and the areas in between them can constitute a proper definition of the site. HGCPOA noted that the three areas of contamination which were included in the HRS score total 53,761 square feet which is 0.41 percent of the Del Amo site. HGCPOA contended that the site description cannot include areas which have not been

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[9]'Area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or otherwise come to be located. Such areas may include multiple *sources* and may include the area between *source*s. 40 C.F.R. pt. 300, App. A, § 1.1 91994) (emphasis added).'

[10]'Any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance. *ID.*

identified within the contaminated area, and EPA's site description which includes uncontaminated areas is inconsistent with EPA's regulation and guidance. HGCPOA contended that there is no reason why the site cannot be limited to the Del Amo Pits, the ground water associated with the LNAPL plume, and other areas where contamination is found.

HGCPOA also referred to EPA's response to comments for the Naval Weapons Station Yorktown - Cheatham Annex site, as published in *Support Document for the Revised National Priorities List Final Rule, December 2000*. HGCPOA stated the following:

> In the proposal to add the Naval Weapons Station Yorktown - Cheatham Annex to the NPL, the Navy argued that the site description of the Cheatham Annex ("CAX") was too limited and that the CAX should be included in the whole Naval Weapons Station Yorktown property. The EPA stated that the CAX site description was correct because for 'HRS purposes, the CAX site is the location of the release, not the property boundaries of the base; EPA evaluated the release without regard to the property boundaries.' Here as in the CAX case, EPA should evaluate the releases and the contamination 'without regard to the property boundaries.'

In response, EPA has not identified the entire 280 acres of the original Del Amo property area as the NPL site. In the 2000 HRS documentation record, EPA has documented the Del Amo Pits and Pond sources, the NAPL ground water contamination source, 10 additional areas not included in the scoring (see Figure 5.35 of Reference 50 of the 2000 HRS documentation record), and the release to ground water as areas where hazardous substances have come to be located.

CERCLA Section 105(a)(8)(A) requires EPA to list national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. Further, CERCLA Section 101(a) defines a "facility" as the "site" where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." The "come to be located" language gives EPA broad authority to clean up contamination when it has spread from the original source. On March 31, 1989 (54 FR 13298), EPA stated:

> HRS scoring and the subsequent listing of a release merely represent the initial [emphasis added] determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will need to be refined and improved as more information is developed as to where the contamination has come to be located; this refining step generally comes during the RI/FS stage.

The revised HRS (55 FR 51587, December 14, 1990) elaborates on the "come to be located" language, defining "site" as "area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources, and may include the area between the sources."

Even during or following a remedial action (e.g., the removal of buried waste), EPA may find that the contamination has spread further than or not as far as previously estimated. It is important to note that the operation of the 280-acre Del Amo synthetic rubber facility began almost sixty years ago and ceased some thirty years ago. With the passage of time, the operational and spill histories of the plants are almost impossible to reconstruct with any reasonable degree of accuracy. Buildings now cover substantial areas once occupied by plant operations, making comprehensive sampling infeasible in many

areas. As a result, there is a significant risk that additional areas of contamination and sources will be discovered or confirmed in the future.

The site narrative for the December 2000 reproposal clearly states that a 280-acre synthetic rubber manufacturing facility operated on the property. The narrative does not suggest that EPA has determined that the site encompasses the entire property. EPA notes that in response to comments on the 1996 reproposal of the Del Amo site, the site narrative was amended to minimize any confusion caused by the wording of the site narrative. In the 1996 NPL site narrative, the sentence, "From the early 1940s to the early 1970s, a synthetic rubber manufacturing facility operated on-site" was revised to state the following in the 2000 NPL site narrative:

> From the early 1940s to the early 1970s, a 280-acre synthetic rubber manufacturing facility operated on the property.

Also in the 1996 NPL site narrative, the sentence, "The three plants were dismantled and the site was commercially developed" was revised to state the following in the 2000 NPL site narrative:

> The facility was dismantled in the early to mid 1970s, and the property is currently occupied by a business park.

The term "site" had been changed in the 1996 site narrative to ?property." Changing this term to one that had no direct linkage to terms in the HRS should have removed the implication that the Del Amo site consists of the entire 280-acre property and clarified that the precise boundaries of the site are not currently known. These changes had been implemented and are clearly reflected in the site narrative for the December 2000 reproposal of the site.

5.1.3.6.2 Site Name

HGCPOA stated that in 1993, EPA revised the site name from the Del Amo Facility to the Del Amo Pits. It added that in 1993 EPA stated in the *National Priorities List Description of Del Amo*, that the proposed site included only the Del Amo Pits and other areas where contamination from a former synthetic rubber manufacturing facility is identified. It added that EPA never took any final action regarding the 1993 proposal. According to HGCPOA, in the present name of the site, EPA now seeks to again include all 280 acres in the Del Amo site without justification and in blatant disregard of EPA's 1993 statement and comments.

In response, the Agency sees no reason for changing the site name at this time. The Agency does not have sufficient data to explicitly define the extent of the site. EPA prefers names that accurately reflect the location or nature of the problems at a site and that are readily and easily associated with a site by the general public. EPA considers that the site's present name, Del Amo, reflects the general location of the site that the public has come to associate with the contamination. The site is in the vicinity of what is known as the Del Amo facility, and the releases identified are related to activities at that facility. EPA has been referring to the site as the "Del Amo site" for over a decade, and this is the name used to identify the site in key documents (such as the two records of decision cited earlier). EPA has also employed this name in fact sheets used to inform the public about the site.

The purpose of the NPL is to serve primarily as an informational tool for use by EPA in identifying those sites that appear to present a significant risk to public health or the environment. The naming of the site does not reflect a judgment of the activities of the owner or operator of a site. It does not require those persons to undertake any action, nor does it assign liability to any other person. The courts upheld EPA's policy of naming sites, especially "in light of the limited purpose of the NPL." Specifically, the Court noted that EPA's reasoning was not arbitrary and capricious in naming the site, and agreed with EPA that 'EPA prefers names that accurately reflect the location or nature of the problems at the site and that are readily and easily associated with a site by the general public.' See RSR Corporation v. EPA, 102 F.3d 1266, 1271 (D.C. Cir. 1997).

5.1.3.6.3 Other Sources

With regard to potential sources, HGCPOA commented that in Reference 6 of the 2000 HRS documentation record, *Map Showing Sources 1, 2, and 3 at the Del Amo site*, and in Figure 5.3-5 (a plant site map of ground water contamination sources areas) of Reference 50 of the 2000 HRS documentation record, *Final Groundwater Remedial Investigation Report, Del Amo Study Area*, EPA referred to sources not included in scoring, but that EPA does not refer to any citations which confirm that hazardous substances were, in fact, released from these locations. It added that EPA admits that one of the criteria for including these sources is 'historical information indicating the presence of facilities where . . . chemicals were stored, processed, or disposed of . . .' HGCPOA contended that the HRS definition of site does not include potential sources, and, moreover, none of these alleged other sources have been scored. According to HGCPOA, HRS regulations do not indicate that unscored potential sources can be included in the definition of a site, and these unscored sources cannot be considered part of the Del Amo site. HGCPOA concluded that including areas that are not properly part of the site "subjects many properties in the HGCPOA to the 'harmful effects of being linked to a site paced on the NPL. . . [including] damage to business reputation, loss of property value and other considerable costs.' *Mead Corp*., 100f.3d at 155 and cases therein."

In response, HGCPOA is correct that there are other sources listed in the 2000 HRS documentation record and the references to it. However, HGCPOA is incorrect that these sources are considered other *potential* sources. Rather, these other sources are *actual* sources at the site that were not used in calculating the HRS score. The HRS does not require scoring all sources at a site if scoring those sources does not change the listing decisions. The HRS is a screening tool that uses limited resources to determine whether a site should be placed on the NPL for possible Superfund response.

As cited in the 2000 HRS documentation record, Reference 6 of the 2000 HRS documentation record, *Map Showing Locations of Sources 1, 2, and 3 at the Del Amo Site*, is a map prepared by Dames and Moore for the Remedial Investigation Report, Del Amo Study Area, Los Angeles, California, for Shell Oil Company and The Dow Chemical Company (October 29, 1993, Plate 3-3). This map depicts the location of Sources 1, 2, and 3 as well as the locations of the Former Butadiene Plant, the Former Copolymer Plant, and the Former Styrene Plant. On this map, Sources 1, 2, and 3, however, are not the only locations listed as sources for the HRS site. There are other areas on the Former Butadiene Plant, the Former Styrene Plant, and the Former Copolymer Plant that qualify as HRS sources. The 2000 HRS documentation record as proposed specifically lists 10 such other source areas (page 46 of the 2000 HRS documentation record for the December 2000 (the present) proposal of the Del Amo site).

The other sources listed on page 46 of the 2000 HRS documentation record meet the HRS definition of a source based on information documented in the HRS documentation record. As discussed earlier, HRS Section 1.1, *Definitions,* defines a source as "[a]ny area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance. . . ." Also, the HRS says in Section 2.2.2, *Identify hazardous substances associated with a source,* that hazardous substances can be associated with a source by samples, labels, manifests, or oral or written statements. The other sources listed on page 46 of the 2000 HRS documentation record were listed as sources based on two or more of the following lines of evidence: observation of NAPL in a well or boring; water table analytical data indicating contaminant concentrations elevated relative to surrounding monitoring locations; historical information indicating the presence of facilities where large volumes of chemicals were stored, processed, or disposed of; and shallow soil gas data indicating elevated concentrations of VOCs (see page 46 of the 2000 HRS documentation record). The following source areas are listed on page 46 of the 2000 HRS documentation record, but were not included in scoring:

1. Cyclohexane tanks associated with the former copolymer plant in the northern portion of the site,
2. Onsite "pits and trenches" in the former copolymer plant area,
3. Volatile organic compound (VOC) tanks associated with the former styrene finishing/benzene purification unit,
4. VOC tanks and/or underground pipelines associated with the former styrene finishing unit,
5. Tank farm in the former styrene plant area,
6. VOC storage tanks associated with the former ethylbenzene production unit #1,
7. VOC storage tanks associated with the former ethylbenzene production unit #2,
8. Utility tanks in the former styrene plant area,
9. Underground benzene pipeline in the southeast portion of the site, and
10. Laboratory underground pipelines in the former butadiene plant area in the eastern portion of the site.

Figure 5.3-5 of Reference 50 of the 2000 HRS documentation record, *Final Groundwater Remedial Investigation Report, Del Amo Study Area* (May 15, 1998), identifies 12 areas as ground water contamination sources in the Del Amo Study Area. Two of these 12 areas are associated with the three sources scored in the 2000 HRS documentation record, the pits, surface impoundments, and NAPL contamination. The remaining 10 are listed on page 46 of the 2000 HRS documentation record as other sources at the site that are not used in scoring. These are the same 10 source areas listed above. These sources are within the Former Butadiene Plant, Former Copolymer Plant, and the Former Styrene Plant identified in Reference 6 of the 2000 HRS documentation record. The sources depicted in Figure 5.3-5 of Reference 50 were also identified as sampling locations with elevated concentrations of VOCs in ground water and/or elevated concentrations of VOCs in soil gas. Hazardous substances have been identified at these source locations.

EPA notes that a source need not be releasing hazardous substances for the source to contribute to the HRS score. Rather, a source can contribute to the HRS score if hazardous substances are associated with a source and the source is not adequately contained to *prevent* migration of hazardous substances to the pathway being scored (see HRS Sections 2.2.2 and 2.2.3). As discussed previously, hazardous substances have been documented to be associated with each source. In addition, evidence supporting that the other 10 sources listed on page 46 of the 2000 HRS documentation record are inadequately contained to prevent migration is discussed below. In fact, all 10 are associated with the release to ground water or air.

HRS Section 2.2.3, *Identify hazardous substances available to a pathway*, says to consider hazardous substances as being available to migrate from the source to the pathway if they are associated with a source with a containment factor value greater than zero for the pathway being evaluated. For the ground water migration pathway, HRS Table 3-2, *Containment Factor Values For Ground Water Migration Pathway*, is used to evaluate the containment of sources for that pathway. According to HRS Table 3-2, "evidence of hazardous substance migration" from all sources (except surface impoundments, land treatment, containers, and tanks) is assigned a containment factor value of 10. Similarly other sections of Table 3-2 also direct a value of 10 to be assigned if evidence of migration exists. According to Figure 5.3-5 of Reference 50 of the 2000 HRS documentation record, for the 10 other sources listed on page 46 of the 2000 HRS documentation record, volatile organic compounds with elevated concentrations in ground water and/or in soil gas have been associated with each of those sources. This evidence is sufficient to show these sources are not adequately contained; are assigned a containment factor value greater than zero; and thus, their associated hazardous substances are available to migrate or have migrated to ground water, or pose a likelihood to release to the environment.

5.1.3.6.4 Delisting Uncontaminated Areas

HGCPOA commented that uncontaminated properties should not be included as part of the NPL site because they would have to go through a complicated delisting process to be removed from the NPL; and to be delisted, they must undergo a costly remedial investigation. HGCPOA finds it arbitrary and capricious to require properties for which there is no evidence of contamination to undergo a delisting process. HGCPOA concluded that if EPA chooses to list the Del Amo site on the NPL, it must revise the site description to accurately describe those areas which are part of the site.

In response, as stated previously, the *NPL Site Narrative at Listing* for the Del Amo site did not indicate that the entire 280 acres of the Del Amo facility are contaminated, and thus, it is not correct for HGCPOA to assume that uncontaminated areas of the Del Amo property will have to undergo the delisting process. The NCP at 300.425(e) specifically states that *releases* are deleted or recategorized on the NPL where no further response is appropriate. This section of the NCP does not address uncontaminated areas, nor are they considered part of the site. Thus, uncontaminated areas are not expected to undergo the delisting process.

5.1.3.7 Aquifer Interconnection

HGCPOA commented that EPA's site score is invalid because it is based on the assumption that the aquifers in the area are interconnected. Its rationale for this is based on the following statements.

HGCPOA stated the following: "EPA has apparently determined that the upper aquifers, which are not used for drinking water, and the lower aquifers are 'interconnected' within two miles of the sources at the site, and therefore, the benzene from the Del Amo [s]ite poses a risk to populations served by these aquifers."

HGCPOA questioned EPA's assertion on page 51 of the 2000 HRS documentation record that 'hazardous substances have migrated from the Upper Bellflower aquifer down to the Lynwood aquifer through the other listed aquifers.' According to HGCPOA, it is not aware of any information that any contaminants from the Del Amo site have migrated down through these aquifers. "The information relied upon by EPA

relates to findings of chlorobenzene and p-CBSA, neither of which originated on the alleged Del Amo site."

HGCPOA contended that although benzene is present as a non-aqueous phase liquid on a portion of the former rubber plant, benzene has never been found below these areas in the Gage, Lynwood or Silverado aquifers, demonstrating that there is no aquifer interconnection. It added that because benzene cannot be expected to reach these aquifers and EPA has already found that benzene poses no risk, basing a listing decision on the alleged threat of migration of benzene to lower level drinking water aquifers is arbitrary and capricious.

HGCPOA contested the use of Reference 15 of the 2000 HRS documentation record, *Planned Utilization of the Ground Water Basins of the Coastal Plains of Los Angeles County* (State of California Department of Water Resources, Bulletin 104), to support EPA's assertion that the 'unnamed aquitard between the Lynwood and Silverado aquifers is not laterally continuous within 2 miles of the Del Amo site.' It commented that it is impossible to determine whether this reference supports this fact. HGCPOA stated that it has submitted evidence (a report by "Steve Larson") on prior occasions, demonstrating that the aquifers in this area are not interconnected. Comments received from Albert M. Cohen, Thomas W. Kearns, and Alfred E. Schretter on the 1991 proposal of the Del Amo site to the NPL contained a signed statement from Mr. Steven P. Larson as an attachment to their comments. Mr. Larson is a Ground Water Hydrologist and was retained by the commenters in connection with the 1991 proposed listing of Del Amo on the NPL. Mr. Larson stated that there is insufficient data to support the conclusion that hydraulic interconnection exists between the Gage and Lynwood aquifers at or within two miles of the site. He also stated that EPA was arbitrary and capricious in using a well possibly upgradient from the site to show interconnection. His conclusions were based on his review of a 1989 *CERCLA Expanded Site Inspection, Del Amo* report prepared by Ecology & Environment, Inc. (Reference 12 of the HRS documentation record for the 1991 proposal of Del Amo) and a 1961 report entitled, *Planned Utilization of the Groundwater Basins of the Coastal Plain of Los Angeles County* (California Department of Water Resources Bulletin No. 104) (Reference 16 of the HRS documentation record for the 1991 proposal of Del Amo).

In response, the rationale contained on pages 51 through 54 of the 2000 HRS documentation record for the present proposal is sufficient to document that the five uppermost aquifers under the site (the Upper and Lower Bellflowers, the Gage, the Lynwood, and the Silverado, in order of depth) act as a single hydrologic unit and should be evaluated as such.

Section 3.0.1.2.1 of the HRS provides that multiple aquifers can be considered for scoring purposes as a single hydrologic unit (i.e., a single aquifer). It states that one should "[e]valuate whether aquifer interconnections occur within 2 miles of the sources at the site. If they occur within this 2 mile distance, combine the aquifers having interconnections in scoring the site." Similarly, Section L, *Ground Water Migration Pathway*, of the preamble to the revised HRS final rule (55 FR 51551, 51553, December 14, 1990) explains circumstances in which aquifers generally can be considered interconnected. These include circumstances where contamination has been shown to have migrated across an aquifer boundary separating the aquifers or where there is no continuous, significantly lower hydraulic conductivity layer that separates the two aquifers throughout the 2-mile radius.

The rationale presented on pages 51 through 54 of the 2000 HRS documentation record for considering the four uppermost aquifers underlying the site as a single aquifer is based on evidence documenting the migration of contamination through all but the Silverado aquifers, and that the Silverado aquifer is hydraulically interconnected with the other four aquifers. This rationale is based on ground water

samples collected as part of remedial investigation at the Montrose Superfund site across the street from, and within two miles of, the sources at the Del Amo site.

The detection of chlorobenzene and para-chlorobenzene sulfonic acid (p-CBSA) in the upper Bellflower aquifer, the Bellflower sand aquifer, the Gage aquifer, and the Lynwood aquifer shows aquifer interconnection between these aquifers within two miles of the site (pages 51 to 54 of the 2000 HRS documentation record). EPA agrees that chlorobenzene and p-CBSA are not associated with the Del Amo site, and are attributable to the Montrose Chemical site. However, this does not mean that they cannot be used to demonstrate aquifer interconnection within two miles of the Del Amo site.

The Montrose Chemical site is located immediately west and south of the Del Amo site, and the upper Bellflower aquifer, the lower Bellflower sand aquifer, the Gage aquifer, the Lynwood aquifer, and the Silverado aquifer are present at the Montrose Chemical site (page 47 of the 2000 HRS documentation record and Reference 16 of the 2000 HRS documentation record, *Final Draft remedial Investigation, Montrose Site, Torrance, California*). The monitoring wells documenting the downward migration of chlorobenzene and p-CBSA are within 2 miles of the sources of the Del Amo site. Hence, because the same aquifer units are evaluated for the Del Amo and the Montrose Chemical sites and there are no vertical discontinuities between the two sites, the migration of chlorobenzene and p-CBSA from the Montrose Chemical site through the upper to the lower aquifer units substantiates aquifer interconnection. Furthermore, there are no vertical discontinuities between the Del Amo site and these monitoring wells. Thus, the analytical data for chlorobenzene and para-chlorobenzene documenting aquifer interconnection between the first four aquifers in the vicinity of the Del Amo site (pages 47 to 54 of the 2000 HRS documentation record). Thus, the migration of these compounds through the upper to the lower aquifer units supports aquifer interconnection for scoring the Del Amo site (see section L of the preamble to the final HRS rule and page 131 of the *HRS Guidance Manual*).

The Silverado aquifer is interconnected with the Lynwood aquifer (and thus with the other four aquifers) because no aquitard exists between them that is laterally continuous between the two aquifers (pages 51 and 54 of the 2000 HRS documentation record). The 2000 HRS documentation record states that the Del Amo site is approximately one mile east of the coastal area where merging of the two aquifers, the Lynwood and the Silverado, is known to occur (State of California Department of Water Resources, Bulletin 104, Reference 15 of the 2000 HRS documentation record at proposal).

In summary, because contamination has migrated from the Upper Bellflower to the Lynwood aquifer within two miles of the site and the aquitard between the Lynwood and the Silverado aquifers is not continuous within two miles of the site, the five aquifers were appropriately evaluated as a single aquifer for HRS purposes.

With regard to the report by Steve Larson, this report has no impact on the current listing of the Del Amo site on the NPL. Mr. Larson's comments relied on *Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County* (California Department of Water Resources Bulletin No. 104 and the 1989 *CERCLA Expanded Site Inspection, Del Amo*. *Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County* (California Department of Water Resources Bulletin No. 104) was submitted as Reference 16 of the 1991 proposal of the Del Amo site to the NPL and was also included as Reference 15 of the December 2000 proposal of Del Amo to the NPL. With regard to the report, *Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County* (California Department of Water Resources Bulletin No. 104), EPA disagrees with Mr. Larson's comment that this reference does not support aquifer interconnection within 2 miles of the site. Bulletin

104 does show an unnamed aquitard between the Gage and Lynwood aquifers at the site; however, EPA did not rely on the lack of a continuous aquitard between these two aquifers to show interconnection between them. As stated above, these are shown to be interconnected based on contaminants migrating from one to the other. Furthermore, Bulletin 104 does not show that the aquitard between the Gage and the underlying Lynwood aquifer is continuous within 2 miles of the Del Amo site (see page 133 and Plate 6C of Reference 15 of the 2000 HRS documentation record, *Planned Utilization of the Ground Water*

Basins of the Coastal Plain of Los Angeles County (California Department of Water Resources Bulletin 104).

Regarding Mr. Larson's assertion that EPA was arbitrary and capricious in using a well possibly upgradient from the site to show interconnection, EPA has followed the instructions in Section 3.0.1.2.1 of the HRS. As discussed above, the HRS does not limit the interconnections for consideration to those downgradient of the site. In fact, as discussed in the preamble to the revised HRS (55 FR 51551, December 14, 1990), neither the original HRS nor the revised HRS directly considered ground water flow direction in evaluating targets. (Evaluating aquifer interconnection is a necessary part of the identification of targets because the targets evaluated must be those using the aquifer or interconnected aquifers being evaluated.) In responding to public comments on the proposed (original) HRS on July 16, 1982 (47 FR 31190), EPA explained that it is generally not practicable to determine the population actually exposed or threatened by using ground water flow information. In many instances, the information is not available, and in others the flow direction varies over time. Even where there is extensive knowledge of geohydrology, interpretation is nearly always subject to dispute. Requiring a precise measure of the affected population would add inordinately to the time and expense of applying the HRS. EPA decided not to use ground water flow information, even when available, because of the need to develop a nationally uniform system for scoring a large number of sites expeditiously with commonly available data. EPA reconsidered this issue when revising the HRS, and determined that the decision not to directly consider ground water flow direction in evaluating targets was still appropriate.

Regarding HGCPOA's comment that it was unable to determine from Reference 15 of the December 2000 HRS documentation record that the unnamed aquitard between the Lynwood and the Silverado is not laterally continuous for 2 miles within the site, this report documents that the unnamed aquitard is a discontinuous layer within 2 mile of the site. Plate 6C of Reference 15 of the 2000 HRS documentation record, *Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County,* California Department of Water Resources, Bulletin 104 shows that the Lynwood aquifer is confined throughout the West Coast Basin except in those areas where it merges with the overlying Gage aquifer. The Lynwood aquifer also merges with the underlying Silverado aquifer along the Santa Monica Bay and along the Newport-Inglewood uplift. This information supports that the aquitard identified in Reference 15 between the Lynwood and the underlying Silverado is not continuous and that the Gage, Lynwood, and Silverado aquifers are interconnected within 2 miles of the site (see page 133 and Plate 6C of Reference 15 of the 2000 HRS documentation record, Bulletin 104, *Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County*).

EPA has added the Declaration of Steven P. Larson (signed October 17th 1991) (Sfnd-2000-0004-0046) and a map, *Ground Water Geology of the Coastal Plain of Los Angeles County, Lines of Equal Elevation on the Base of the Lynwood Aquifer*[11] (Sfund-2000-0004-0052) to the docket for this NPL listing.

[11]Plate 18B, of California Department of Water Resources Bulletin No. 104, *Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County*

5.1.3.8 Ground Water Flow Direction and Ground Water Targets

HGCPOA commented that EPA is well aware and in fact it has already found in the Record of Decision and proposed remedies for this proposed site, that the groundwater flow direction in this area is to the southeast. HGCPOA noted that most of the wells EPA is scoring are located north and upgradient of the site at a distance of 1.5 to 3.5 miles.

According to HGCPOA, "[w]hile use of default provisions allowing EPA to consider wells within four miles in any direction might make some sense where there is little or no information available regarding groundwater flow direction, it is arbitrary and capricious to consider upgradient wells where the site has been under investigation for some twenty years." HGCPOA added that there are numerous and extensive ground water investigations of the area; ground water flow direction is well established; and, EPA has already made specific findings and selected remedies based on its knowledge of ground water flow direction. Thus, HGCPOA contends that EPA's assessment of how many people are potentially exposed to contaminated ground water is incorrect and renders the scoring arbitrary and capricious because EPA included wells that are known to be upgradient of the proposed site even though there is absolutely no possibility that these wells or the populations they serve are at risk.

HGCPOA contested the inclusion of all the target wells other than DWC19A, DWC 79, DWC 75A, DWC 77, DWC 15, DWC 16, and DWC 98 as part of the HRS site score. It stated that all the **other**[12] wells are not downgradient of ground water flow and should not have been evaluated in scoring the site.

HGCPOA concluded that based only on downgradient wells, "the groundwater migration pathway would be reduced from 94.23 to 52.42 and the overall site score to 26.26 which is below the cutoff for listing the site on the NPL." It added that site should, therefore, not be listed on the NPL.

In response, the 2000 HRS documentation record correctly evaluated the drinking water wells within 4 miles of the Del Amo site as potential targets. The HRS does not directly consider ground water flow gradient. In fact, as discussed in the preamble to the revised HRS (55 FR 51551, December 14, 1990), neither the original HRS nor the revised HRS directly considered ground water flow direction in evaluating potential targets. In responding to public comments on the proposed (original) HRS on July 16, 1982 (47 FR 31190), EPA explained that it is generally not practicable to determine the population actually exposed or threatened by using ground water flow information. In many instances, the information is not available, and in others the flow direction varies over time. Even where there is extensive knowledge of geohydrology, interpretation is nearly always subject to dispute. Requiring a precise measure of the affected population would add inordinately to the time and expense of applying the HRS. EPA decided not to use ground water flow information, even when available, because of the need to develop a nationally uniform system for scoring a large number of sites expeditiously with commonly available data. EPA reconsidered this issue when revising the HRS, and determined that the decision not to directly consider ground water flow direction in evaluating targets was still appropriate (See 55 FR 51551, December 14,990). Also, ground water flow can be influenced by various environmental and man made conditions. That is, while the general ground water direction is known, it cannot be relied on to be

[12]The other wells scored are DWC97, SCWC Dalton, TWD6, SCWC Cerise, SCWC Southern 3, SCWC Southern 4, and SCWC Southern 5. Thus, according to HGCPOA, wells DWC97, SCWC Dalton, TWD6, SCWC Cerise, SCWC Southern 3, SCWC Southern 4, and SCWC Southern 5 are not downgradient of ground water flow and should not be scored in the HRS documentation scored.

in that direction when other wells may be withdrawing water from the same aquifer. For these reasons, the general ground water flow is not directly considered in HRS scoring.

Instead, the HRS considers flow direction indirectly in the method used to evaluate target populations by weighting target populations based on actual and potential contamination of drinking water wells. The HRS uses a radius of 4 miles around the site when determining the distance to the nearest well in the contaminated aquifer and the population at risk due to actual or potential contamination, provided there is no discontinuity that completely transects the aquifer of concern between the site and the well being scored for HRS purposes.

In addition, if wells have not been contaminated by the site, as would be typical of upgradient wells, the wells are considered potentially rather than actually contaminated, and the population drawing from those wells is distance weighted. Conversely, if wells have been contaminated, a stronger likelihood for downgradient wells, the wells are considered actually contaminated and given higher weight in scoring.

Also, the HRS and its requirement that wells within 4 miles of the sources at the site be considered as targets was established through notice and comment rulemaking. EPA does not have discretion to deviate from requirements set out in rules. To the extent that HGCPOA's comment questions the adequacy of the HRS and its ability to adequately evaluate targets, HGCPOA's comment is beyond the scope of this rulemaking; the current HRS was promulgated on December 14, 1990 (55 FR 51532) after notice and comment. In as much as this comment is on the HRS itself, this comment is untimely. HRS Section, 3.0.1.1, *Ground water target distance limit*, states the following: "The target distance limit defines the maximum distance from the sources at the site over which targets are evaluated. Use a target distance limit of 4 miles for the ground water migration pathway, except when aquifer discontinuities apply." It does not state to consider flow direction in setting the TDL, and is consistent with the preamble to the HRS discussing that the ground water flow direction is not considered directly in the HRS. These rules, as promulgated on December 14, 1990, were followed in evaluating the drinking water wells considered as targets for the ground water migration pathway at the Del Amo site.

5.1.3.8.1 Nearest Well

HGCPOA contested the nearest well data used in scoring. It stated that the nearest well, 19A appears to be 2 miles from the site, but EPA indicated that this well is 1.5 miles from the site. HGCPOA requested that EPA confirm this data.

In response, HGCPOA has incorrectly assumed that the nearest well is Well 19A. The 2000 HRS documentation record at proposal assigned a nearest well factor value of 5 to well DWC 97, which is 1.5 miles from the sources at the site (pages 3 and 62 of the 2000 HRS documentation record). As shown below, this is consistent with the documentation for this well and HRS Section 3.3.1, *Nearest Well*, and Table 3-11, *Nearest Well Factor Values*.

HRS Section 3.3.1, *Nearest well*, states that if none of the drinking water wells is subject to Level I or Level II concentrations, determine the shortest distance to any drinking water well, as measured from any source at the site with a ground water containment factor value greater than 0. Select a value from Table 3-11 based on this distance.

According to HRS Table 3-11, *Nearest Well Factor Values*, a target well located at a distance of 1 to 2 miles from the source at the site is assigned a nearest well factor value of 5 points. In Reference 32 of the 2000 HRS documentation record, *Map Showing Locations of Drinking Water Wells Within 4 Miles of Sources 1, 2, and 3 at the Del Amo Site*, the ¼-mile, ½-mile, 1-mile, 2-mile, 3-mile, and 4-mile distance rings from the sources at the Del Amo Site are depicted. Well DWC 97 is at 169 W. Victoria in Carson (see Reference 38 of the 2000 HRS documentation record at proposal). Reference 32 of the 2000 HRS documentation record as proposed, the map that depicts the four mile distance rings at the site and the locations of the target wells, is based on the USGS 7.5 minute series topographic quadrangles of Inglewood, Long Beach, South Gate, and Torrance, California; the Rand McNally Streetfinder (1997); the Southern California Water Company Contact Report dated 2/11/00 [Reference 40 of the 2000 HRS documentation record]; the Dominguez Water Company Contact Report dated 2/17/00 [Reference 38 of the 2000 HRS documentation record]; and City of Torrance Water Department Contact Report dated 2/24/00 [Reference 39 of the 2000 HRS documentation record]. This reference shows well DWC 97 at a distance of approximately 1.5 miles from Source 3 at the site. Well DWC 97 is clearly within the 2-mile distance ring, from Source 3 at the site, requiring a nearest well factor value of 5 points to be assigned to the targets score. Thus, the nearest well factor value was correctly assigned for this site.

DWC Well 19A, which HGCPOA incorrectly assumed is the nearest well, is shown in Reference 32 of the 2000 HRS documentation record to be 1.8 miles from the source at the site (page 61 of the 2000 HRS documentation record; References 32 and 38 of the 2000 HRS documentation record). If well 19A was the nearest well to the sources at the site, the nearest well assigned factor value would still be 5.

HGCPOA's comments on the distance of the nearest well at the site have no impact on the HRS score.

5.1.4 Conclusion

The original HRS score for this site was 47.12. Based on the above response to comments, the score remains unchanged. The final scores for the Del Amo site are:

Groundwater:	94.23
Surface Water:	Not Scored
Soil Exposure:	Not Scored
Air:	Not Scored
HRS Score:	47.12